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Fruit Situation

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U.S. Department of
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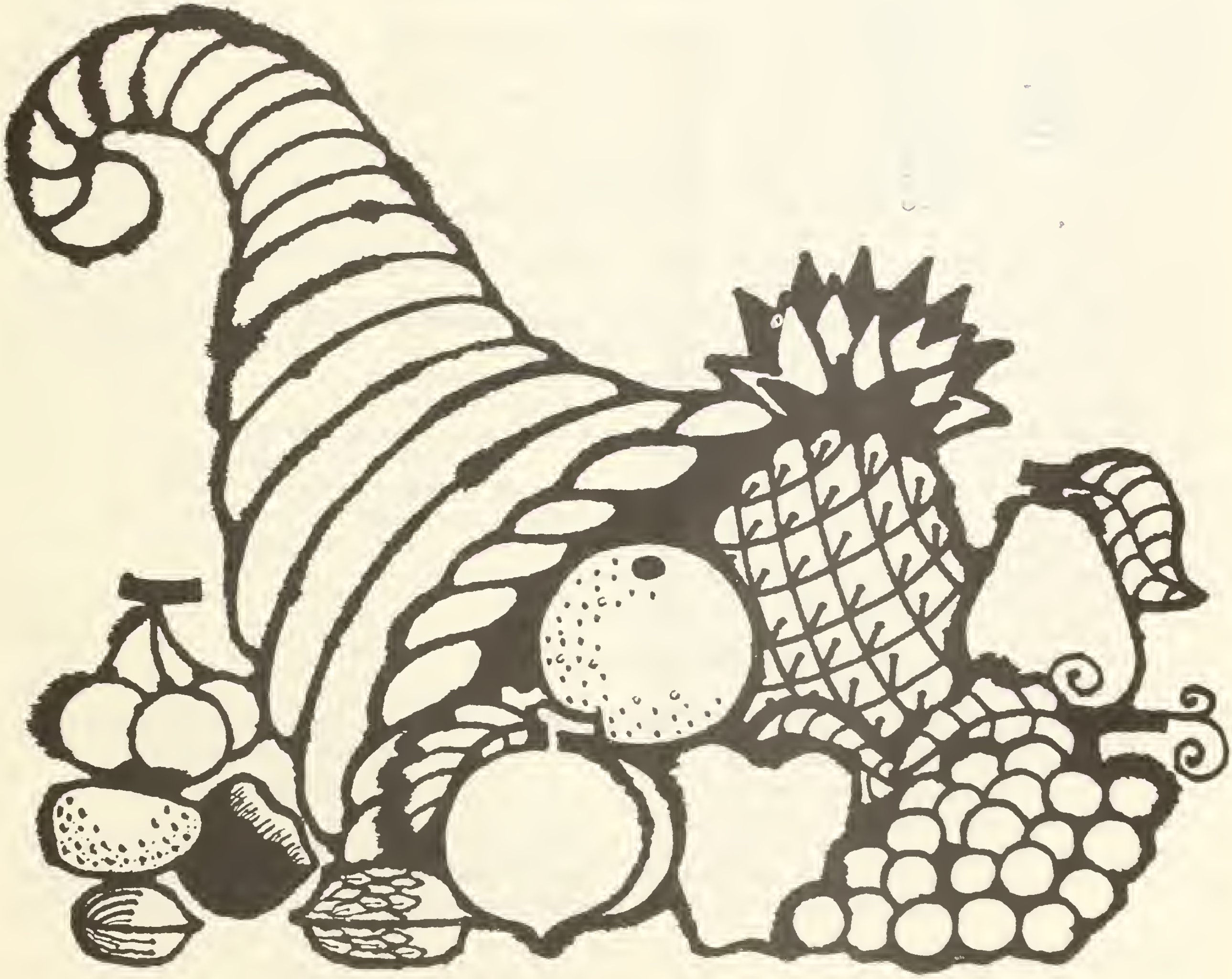

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SUMMARY

Large Supplies of Fruit To Hold Down Grower Prices

Large supplies of noncitrus fruit mean that grower prices for fresh and processing fruit this fall will stay below 1979 prices. Total 1980 noncitrus production is forecast to be slightly larger than last year's large crop. Remaining supplies of fresh citrus will be ample until the fall harvest begins. In addition, Florida citrus groves generally are in good to excellent condition, so another relatively large crop could materialize in 1980/81.

In August, the index of prices received by growers for fresh and processing fruit was 207 (1967=100), 27 percent below August 1979. Nevertheless, retail prices will stay higher than those last year, as marketing and distribution cost continue to increase.

In total, noncitrus production is expected to be less than 1 percent above last year, and about 9 percent above 1978. Apple production is forecast to be 3 percent larger than last year's record crop. Grape production, which also set a record last year, is expected to total 4.83 million tons (4.39 million metric tons), down 3 percent, but California table grape production is forecast to be up 10 percent. The pear crop is expected to be 1 percent larger than in 1979, and the peach crop 2 percent smaller.

The 1980/81 pack of canned fruit will exceed last season's larger output. The large pack, combined with considerably larger carryover stocks, could boost total supplies of canned fruit. However, wholesale prices are expected to stay firm, although there will be occasional promotional price reductions. Retail prices for most canned fruit will stay higher than a year ago, reflecting higher wholesale prices and distribution costs.

Prospects for dried fruit production are about the same this season as last. Raisin production may be below last season's large pack, but the prune pack will be up substantially. Combined with an adequate carryover, this season's production may bring dried fruit supplies above those of last year. Domestic and export demand for raisins will probably stay strong. Nevertheless, large supplies may keep wholesale prices lower than last year.

At the beginning of August, stocks of most frozen noncitrus fruit were above those a year ago. A sharply larger pack of frozen tart cherries is expected, along with a moderately larger pack of frozen strawberries.

The larger remaining supplies of citrus fruit and bigger summer noncitrus crop have kept on-tree returns to citrus growers considerably below a year ago. Returns are expected to increase seasonally until the new harvest gets underway in Florida.

The pack of frozen concentrated orange juice (FCOJ) was sharply larger this year. Combined with a sizable carryover, it has resulted in a total supply well above last year's. Sales, although up, have not kept pace with processing, so Florida packers have reduced f.o.b. prices for FCOJ several times this season. If movement does not increase significantly for the rest of this season, carryover at the beginning of the 1980/81 season will be well above year-earlier levels. If the relatively large orange crop in prospect materializes, FCOJ prices can be expected to ease.

RECENT DEVELOPMENTS AND OUTLOOK

GENERAL PRICE OUTLOOK

The index of prices received by growers for fresh and processig fruit declined in August to 207 (1967=100) from 209 in July, reflecting lower prices for apples, oranges, and pears. The index is 27 percent below a year ago primarily because citrus prices are sharply lower.

Noncitrus fruit production in 1980 is expected to be slightly larger than a year ago, with apples, pears, and tart cherries leading the increase. Citrus trees are in general good to excellent condition, so a large citrus crop is likely. The index of prices received by growers for fresh and processing fruit this fall is expected to decline seasonally as larger apple and citrus supplies become available.

In contrast, retail pices for all fresh fruit are still moderately above year-earlier levels. The rise was caused by sharp increases in apple prices; orange prices have been substantially below a year ago. High marketing costs also boost retail prices. For example, according to the Office of Transportation, U.S. Department of Agriculture, truck cost per vehicle mile was 89.3 cents in December 1979 and 97.1 cents in July 1980. However, large supplies of summer fruit have moderated increases in the consumer price index (CPI-U) for fresh fruit. In July, this index advanced to 282.7 (1967=100), 3.2 percent above June 1980 and only 1.6 percent above July 1979. Fall prices will decline seasonally in response to large new citrus and apple crops but will remain higher than a year ago because of high marketing costs. The consumer price index of processed fruit

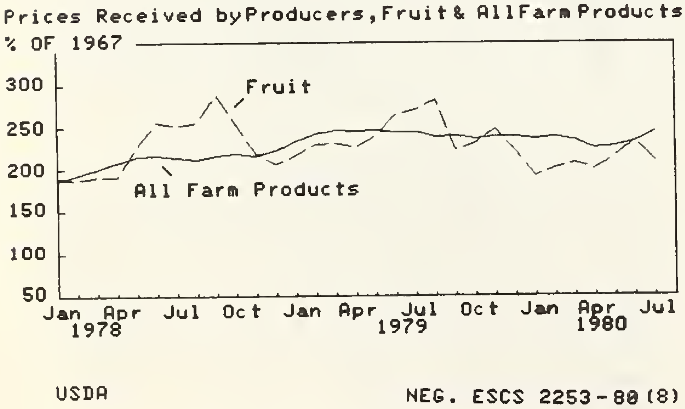


Table 1—Index of quarterly prices received by growers for fresh and processed fruit

Year	(1967=100)			
	1st	2nd	3rd	4th
1976 . . .	126	126	130	135
1977 . . .	143	151	159	200
1978 . . .	189	220	260	225
1979 . . .	226	244	258	233
1980 . . .	200	216		

[1] July-August average.

Source: Agricultural Prices, CRB, ESCS.

Table 2—Quarterly consumer price indexes for fresh fruit

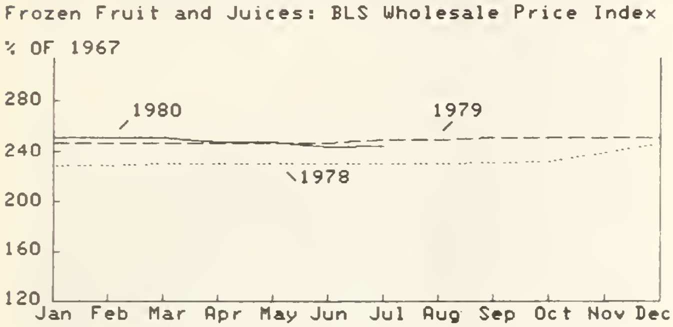
Year	(1967=100)			
	1st	2nd	3rd	4th
1976 . . .	146	161	170	166
1977 . . .	172	190	193	185
1978[1] . .	196	223		
1978[2] . .	194	222	247	221
1979 . . .	218	251	279	246
1980 . . .	238	265	[3] 283	

[1] From 1967-June 1978, these indexes were entitled Urban Wage Earners and Clerical Workers, BLS discontinued these indexes as of June 1978. [2] Starting with Jan. 1978 new index entitled All Urban Consumers, replaces previous index. [3] July.

Source: Bureau of Labor Statistics.

has advanced steadily in July increasing to 122.6 (1967=100), up 6.8 percent from a year earlier. Prices are expected to remain firm in light of high costs of processing and distribution.

Wholesale prices of most processed fruit have been substantially higher this year than last. The July 1980 Bureau of Labor Statistics (BLS) wholesale price index for canned fruit continued to advance, although at a slower pace. At 233.5 (1967=100), the July index was still 7.6 percent above a year ago. Prices are likely to remain moderately higher because of increased contract prices for clingstone peaches and the higher cost of sugar, tin plate, and energy. With general economic prospect strengthening, good demand will also keep wholesale prices of canned fruit firm. On the other hand wholesale prices of dried fruit (especially raisins) and frozen concentrated orange juice (FCOJ) have been below year earlier levels because of larger supplies. In contrast, prices of canned fruit juice have been well above a year ago, because of good demand.


Frozen Fruit and Juices: BLS Wholesale Price Index

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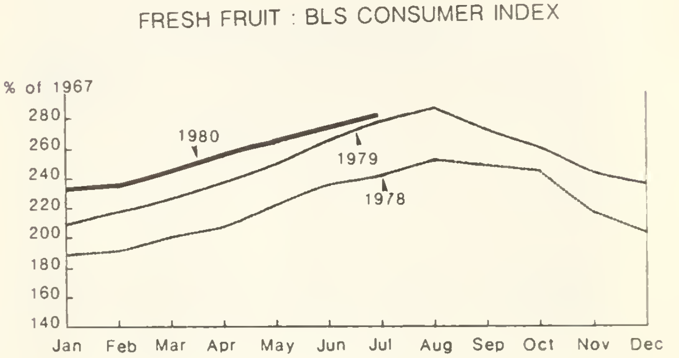
FRESH FRUIT : BLS CONSUMER INDEX

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NONCITRUS

The 1980 production of the noncitrus fruit shown in table 3 was forecast in early August at 12.7 million tons, slightly up from last year. Despite the total increase, most summer fruit crops are smaller than a year ago. Consequently, f.o.b. prices for these fruits generally have been above 1979 levels. Carryover supplies of most processed fruit will be ample, but increased processing and marketing costs will keep retail prices relatively firm.

Table 3—U.S. noncitrus fruit: Total production, 1978, 1979, and indicated 1980

Crop	1978	1979	1980
	1,000 tons		
Apples	3,804	4,045	4,180
Apricots	126	145	124
Cherries, sweet	155	183	167
Cherries, tart.	91	85	124
Grapes	4,567	4,989	4,834
Nectarines	148	172	185
Peaches.	1,348	1,489	1,454
Pears	727	862	873
Prunes and plums . . .	634	655	741
Total	11,600	12,625	12,682

Source: Crop Production, CRB, ESCS.

Apples

Look for a Record Crop

The commercial apple crop, estimated on August 1 at a record 8.36 billion pounds (3.79 million metric

Table 4—Frozen fruit cold storage holdings

Commodity	July 31		
	1978	1979	1980
	1,000 pounds		
Apples	65,470	56,856	50,057
Apricots	12,623	15,111	12,465
Cherries	85,944	70,351	95,697
Grapes	4,913	4,811	5,519
Peaches.	38,655	17,501	19,313
Blackberries	7,229	5,473	15,102
Blueberries.	15,488	18,639	17,083
Boysenberries	3,713	3,416	5,806
Raspberries	26,405	24,772	24,456
Strawberries	192,132	196,668	238,225
Other fruits and berries. .	78,376	68,879	77,017
Total	530,948	482,477	560,740

Source: Cold Storage Reports, ESCS.

tons), was 3 percent larger than the 1979 crop. The Eastern crop was forecast at 3.34 billion pounds or 2 percent larger than last year; the Western States expect a crop of 3.56 billion pounds, 2 percent less than last year, primarily reflecting a substantially smaller California crop. Washington, the leading apple-producing State, is expecting a new production record of 2.60 billion pounds, 2 percent higher than last year. The Central States will register gains of 23 percent, with sharply larger crops from Michigan and Ohio. Data on commercial apple production by State are given in table 14.

Table 5—Apples: Regional production, 1978, 1979, and indicated 1980

Area	1978[1]	1979[1]	Indicated 1980
	Billion pounds		
East.	3.19	3.28	3.34
Central States	1.40	1.19	1.46
West	3.01	3.62	3.56
Total U.S.	7.60	8.09	8.36

[1] Includes unharvested production and excess cullage (million pounds): United States 1978-53.2, 1979-25.6.

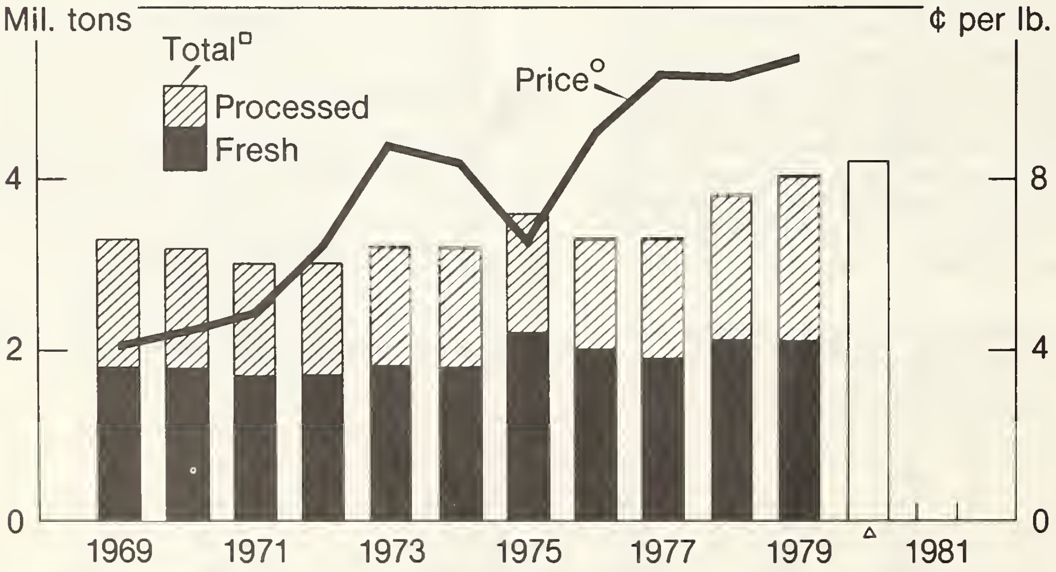
Source: Crop Production, CRB, ESCS.

Among individual varieties, Red Delicious, the leader at 3.1 billion pounds, is up 6 percent. It comprises 37.5 percent of the total commercial apple production, compared with 36.5 percent a year ago. At 1.34 billion pounds, production of Golden Delicious fell 5.5 percent, accounting for 16 percent of total production. Four other leading varieties and their share of total production are McIntosh, 9 percent; Rome Beauty, 7 percent; Jonathan, 5.5 percent; and York Imperial, 4 percent. Combined, the six varieties mentioned account for four-fifths of the U.S. commercial crop.

Utilization of the 1979 Crop

The amount of the apple crop used as fresh fruit continued to increase in 1979, up almost 2 percent from 1978. However, the proportion consumed as fresh declined from 56 percent in 1978 to 53 percent in 1979. Conversely, the quantity processed in 1979 totaled 3.8 billion pounds, up 13 percent from 1978. Because of continued good demand, the share of processing apples used for juice continued to increase,

U.S. Apple Production Utilitization and Prices



□Utilized production. ○Growers season average price. △Indicated total production.

USDA

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from 45 percent in 1978 to 51 percent in 1979. Apples used for canning registered an increase of 9 percent and those for drying an increase of 19 percent from a year earlier. However, apples used for freezing declined 34 percent and for other products (vinegar, wine, jam, and fresh slices for pie filling) 36 percent.

Exports Boom, Imports Rise Sharply

During July 1979-June 1980, exports of fresh apples totaled 236,468 metric tons, up 65 percent from a year earlier. The sharp increase was shared by all major markets. The secondary markets, such as the Far East, Mideast, and Latin America, have also shown continued good demand. Canada, our largest customer, increased its purchases by 22 percent because of a drop in its own crop in 1979. Good demand from England, Norway, Finland, and the Netherlands pushed up total exports to Europe by 19 percent. Exports during the 1980/81 season still look favorable, particularly for the Far East, Mideast and Latin America. However, shipments to Canada and Europe may decline because of better apple crop prospects there.

During the first six months of 1980, U.S. imports of fresh apples totaled 48,296 metric tons, up 21 percent from a year earlier. Sharply larger imports from New Zealand and South Africa were primarily responsible for the increase. New Zealand recorded a 90 percent increase, while imports from South Africa more than doubled from last year. Because of the smaller crop in Canada, our principal supplier, U.S. imports from there declined 7 percent from a year earlier.

Market Outlook

The U.S. season-average price received by apple growers for the 1979 crop was 10.7 cents per pound, up from 10.4 cents in 1978; high prices for fresh use more than offset lower prices for processing use. The '79 season-average price for fresh use, 14.9 cents per pound, was up 7 percent. The '79 season-average price for processing apples was $115 a ton, compared with $117 a year earlier.

Grower prices for fresh apples so far this summer have been substantially to sharply above a year ago. The August price, at 22.6 cents per pound, was 45 percent higher than a year earlier. Strong demand, particularly in the export market, has strengthened fresh apple prices. However, the sharply larger stocks of canned apple products, as well as larger crops from the Central and Eastern States, are likely to weaken prices for processing apples. Nevertheless, if export demand for fresh apples continues strong, prices for fresh apples are expected to be relatively firm despite another record crop from Washington. On the other hand, the reduction in processor demand could exert some downward pressure on prices for apples.

Avocados

Sharply Smaller Crop

The 1979/80 avocado production was 96,000 tons, down 35 percent from the previous year's record crop, due entirely to a smaller California crop. The California crop—at 70,000 tons—was 43 percent

Table 6—Avocados: Acreage, production, yield per acre: 1974/75-1979/80 seasons

Season[1]	Acreage			Production	Yield per bearing acre
	Bearing	Non-bearing	Total		
		1,000 acres		*1,000 tons*	*Tons*
California:					
1973/74	20.7	6.3	27.0	53.4	2.58
1974/75	23.8	10.9	34.7	105.5	4.43
1975/76	25.7	13.9	39.6	58.4	2.27
1976/77	29.0	14.7	43.7	120.0	4.13
1977/78	34.4	13.5	47.9	107.0	3.11
1978/79	39.8	11.3	51.1	123.0	3.09
1979/80[2]	44.4	11.1	55.5	70.0	1.58
Florida:					
1973/74	5.8	1.0	6.8	20.3	3.50
1974/75	6.2	.9	7.1	21.9	3.53
1975/76	6.4	15.0	21.4	29.0	4.53
1976/77	6.9	14.0	20.9	21.1	3.06
1977/78	7.3	14.0	21.3	10.7	1.47
1978/79	7.7	1.8	9.5	23.1	3.00
1979/80[2]	8.0	2.2	10.2	26.0	3.25

[1] Season for California November 1 - October 31; for Florida late June - February. [2] Preliminary.

Source: California and Florida Crop and Livestock Reporting Service.

below a year earlier. Cold temperatures and high winds last winter and spring lowered production. As a result, the season-average price to California growers in 1979/80 was $1,429 per ton, more than double the average of a year earlier. Consequently, the total value of the crop passed the $100 million mark for the first time, up 18 percent from 1978/79. Meanwhile, bearing acreage in California continues to increase. In 1979/80, California had 46,650 bearing acres, compared with 39,800 in 1978/79. Thus, despite the recent production drop, the normally strong growth pattern of California avocados will continue in the years ahead.

Florida produced 26,000 tons of advocados, up 13 percent from 1978/79, but still slightly below the 1975/76 record crop. With reduced competition from the smaller California crop, the season-average price paid Florida growers in 1979/80 reached $615 a ton, up from $400 a year ago. The total value of the Florida crop rose to $16 million, an increase of 73 percent from 1978/79. As in California, the continued increase in bearing acreage will push up Florida production in the years ahead.

Florida avocados for certified shipments for the 1980/81 season are estimated at 27,500 tons, 8 percent more than last season. If it materizlizes, this crop will set a record. As in Caifornia much of the increase is from new land coming into production. Bearing acres now total 8,800 in Florida up 10 percent from 1979/80.

Shipments through July were 116,000 bushels, up sharply from a year ago. Because of a smaller supply of California avocadoes, the f.o.b. prices for Florida avocados have been relatively good—as of August 9, $5.75 a flat, size 8-16, greenskin varieties at Southern Florida. This price compares with $6.00 a year ago. Prices are expected to decline further in view of larger remaining supplies.

Cherries

Sweet Cherry Supplies Substantially Smaller

The final 1980 forecast of sweet cherry production, at 167,000 tons (151,000 metric tons), is 9 percent less than last year's crop but 8 percent more than that of 1978. In the three Pacific Coast States, the major producing area, growers expected a harvest of 127,000 tons, down 10 percent from last year, as reduced crops from Oregon and Washington more than offset an increased crop from California. However, the Northwest experienced heavy rains at harvest time which demaged the remaining supply after this estimate was made. Michigan, a leading producer in the eastern half of the United States, harvested 23,000 tons of sweet cherries, down 6 percent from last year.

Because of the smaller crop, the fresh market price was fairly strong throughout the season and the rain damage further strengthened prices. The f.o.b. price reported for fresh Washington Bing cherries as of July 26 was $15.00 per 18-pound lug, compared with $11.25 a year earlier.

With the larger fresh shipment and smaller crop, the total brined and canned sweet cherry pack will be smaller than in 1979. Thus, the total canned supply is likely to be smaller than last season, even with sharply larger carryover. Consquently, wholesale prices are expected to remain firm.

Sharply Larger Supplies of Tart Cherries

The production of tart cherries was placed at 248 million pounds (112,500 metric tons), 46 percent greater than the 1979 harvest. As of July 1, the production from the Great Lakes States, at 224 million pounds, was 51 percent above a year earlier, mainly reflecting a sharply larger crop from Michigan. However, it appears that approximately 15-20 percent of Michigan's crop was lost in a storm in mid-July.

Through August 2, deliveries of tart cherries to processors, at 64,609 tons, were running 41 percent ahead of last year's pace. The increase was due entirely to larger deliveries for freezing. In Michigan, processors paid 20 cents a pound for top-graded cherries, compared with 50 cents a year ago. Because of the larger crop, many more cherries will be processed. The volume processed this season, combined with a large carryover, means that the supply of canned tart cherries will exceed last year's level. The cold storage holdings of frozen tart cherries at the beginning of August were also significantly above a year ago. Consequently, sharply lower prices of the raw product combined with larger supplies, may weaken somewhat the price of processed tart cherries. The July BLS wholesale price of canned cherries was $10.80 (12-303's), compared with $11.90 last year.

Grapes

Slightly Smaller Crop

The first forecast of the U.S. grape crop is 4.83 million tons (4.39 million metric tons), 3 percent less than last year's record production, but 6 percent above 1978. The California crop, at 4.36 million tons, is 4 percent lower than last year. Prospects for the raisin grape variety crop declined to 2.10 million tons, down 9 percent from the previous year. Bunch counts are down and hot weather in late July has put stress on the vines. The forecast for wine grapes, at 1.80 million tons, is 1 percent below the 1979 record production, but hot weather in late July has improved sugar levels. The forecast for table grapes, at 460,000 tons, is 10 percent greater than a year ago.

Total grape production outside California is estimated at 474,200 tons, up 10 percent from 1979. Larger crops are indicated for all States except Michigan and Arizona. At 127,000 tons, Washington's crop is 24 percent larger than last year; New York's crop, at 185,000 tons, is 12 percent larger.

Market Outlook

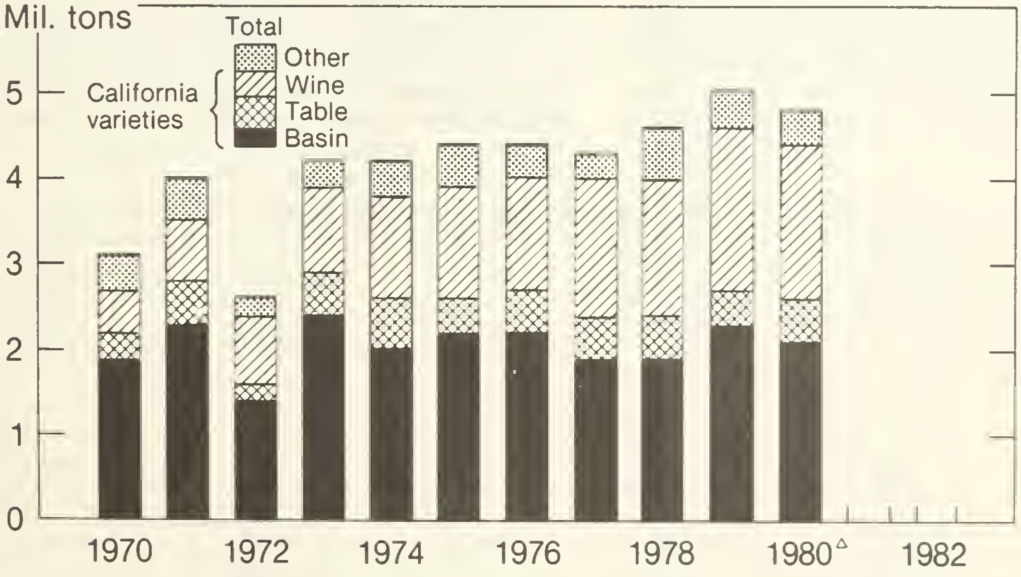
Through early August shipments of fresh table grapes from California were running near last year's volumes. However, f.o.b. prices for fresh grapes were running much higher. On August 16, Thompson Seedless grapes from the Kern District of California were quoted at $12.00 per 23-pound lug, compared with $8.30 a year earlier. Good export demand has strengthened table grape prices. Nevertheless, the fresh use of table grapes may be larger this season because the crop is larger and the market for competing uses of table and raisin varieties, particularly Thompson Seedless, is expected to be weaker. Good demand will keep fresh grape prices relatively firm even though they are expected to decline somewhat with increasing volume.

Because of larger grape supplies, increased crushing for juice is probable in the Great Lake States. In California, the quantity of grapes crushed for wine during 1980 is expected to be relatively large. In April, inventories of wine in California were reported at 426 million gallons, 5.4 percent larger than a year ago. Per capita wine consumption continues to increase, reaching a record 2.03 gallons in 1979.

Movement of raisins returned to a normal level during the 1979/80 season, in response to lower prices and increased availability. According to the Raisin Administrative Committee, total shipments of raisins increased 71 percent from the 1978/79 season. Exports increased 244 percent from last season, with gains in every region of the world. Even with considerably larger shipments, raisin carryover into the 1980/81 season is well above last year's depleted stocks because of the big 1979 crop. Thus, although California raisin grape prospects are below a year ago, a larger carryover should result in a larger supply for the 1980/81 season.

Currently, prices for the 1980 California raisin crop have not been established. Since not all raisin

U.S. Grape Production



○Total production. △Indicated.

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grapes are dried, the price outlook depends on what volume the wine industry will absorb and how many table grapes are available for drying. In addition, both domestic and foreign demand for raisins are expected to be strong.

Nectarines

Record Crop

The 1980 California nectarine production is forecast at a record 185,000 tons (168,000 metric tons), 8 percent above last year. The continued increase in production is the result of the increase in bearing acreage. With the larger crop, shipments of nectarines through mid-August were running well above last year's pace, with f.o.b. prices fairly strong. Prices have firmed substantially since late July, and in mid-August the shipping point price of nectarines (size 56-88, various varieties) was reported at $6.75 per 2-layer lug, in Central and Southern San Joaquin Valley, California, compared with $5.20 a year ago.

Peaches

Slightly Smaller Crop

The U.S. peach crop is now estimated at 2.91 billion pounds (1.32 million metric tons), 2 percent smaller than the 1979 crop. Excluding California clingstone peaches, total production will likely be 1.57 billion pounds, 1 percent less than last year.

As of August 1, peach production in the nine Southern States was estimated at 564 million pounds, down 12 percent from last year. Crops in the late-producing States are expected to be larger, though, with both New Jersey and Pennsylvania up approximately 16 percent and Michigan up 57 percent. Dry weather reduced fruit size in New Jersey and Pennsylvania, but Michigan has an excellent set accompanied by adequate moisture.

Shipments Down, Prices Up

Because of a smaller crop, shipments of fresh peaches to market through early August trailed shipments last year. Prices were generally above the 1979 levels. During the week of August 16, f.o.b. prices for U.S. No. 1, 56-72's at Central and Southern San Joaquin Valley, California averaged $ 4.90 per 2-layer tray pack, sharply higher than a year ago. However, with heavier supplies expected from most of the late States, f.o.b. prices during September may moderate than a year ago.

Ample Supplies of Canned Peaches Expected

Canners' stocks of both clingstone and freestone peaches at the beginning of the new pack were sharply above the small carryovers a year ago. With the smaller crops, total packs this year are likely to be below last year's output, but the sharply larger carryovers will still result in larger supplies. Clingstone growers expect a contract price slightly above the average base price of last year, $150 per ton. The California Freestone Peach Association reported that processors have accepted $125 per ton for Fay Elberta peaches. In 1979 the price was $135 per ton.

The BLS wholesale prices of canned clingstone peaches fluctuated from a low of $6.59 per case (24-2-1/2's) in February to a high of $7.02 in July. The price was $6.62 in July 1979. Even with larger supplies expected during the 1980/81 season, wholesale prices of canned peaches are expected to remain firm because of the higher cost of fruit, sugar, and pro-

Table 7—Nectarines: Acreage, production, yield per acre: 1970 to date

Season	Acreage			Production	Yield per bearing acre
	Bearing	Non-bearing	Total		
		1,000 acres		*1,000 tons*	*Tons*
California:					
1970	7.8	5.2	13.0	66.5	8.53
1971	8.5	5.2	13.7	70.0	8.24
1972	9.9	4.9	14.8	87.0	8.79
1973	10.3	5.3	15.6	86.5	8.40
1974	10.9	5.4	16.3	115.0	10.55
1975	12.0	5.8	17.8	111.0	9.25
1976	13.2	6.4	19.6	128.0	9.70
1977	13.8	7.7	21.5	155.0	11.23
1978	14.7	8.9	23.6	148.0	10.07
1979[1]	16.5	9.7	26.2	172.0	10.42

[1] Preliminary.

Source: California Crop and Livestock Reporting Service.

cessing. However, promotional allowances offered by the packers can be expected from time to time.

Export of Canned Peaches Down Moderately

Total exports of canned peaches during the 1979/80 season amounted to 61,394 metric tons, down 6 percent from the previous season. Most principal countries reduced their purchases. However, the Netherlands purchased 154 percent more than in 1978/79, and shipments to Latin America more than doubled. Exports of canned peaches took off to a fast start at the beginning of 1980/81. June 1980 exports increased 63 percent from a year ago, because of sharply larger shipments to Europe and Japan.

Pears

Slightly Larger Crop

The August 1 forecast of the pear crop, at 873,000 tons (792,000 metric tons), was 1 percent more than last year. Bartlett pear production in the three Pacific Coast States, predicted at 597,000 tons (542,000 metric tons), was also 1 percent larger. Slightly larger California and Washington crops more than offset the moderately smaller Oregon crop. About 80 percent of Bartletts are processed.

Production of pears other than Bartletts in the Pacific Coast States was forecast at 231,000 tons, up 3 percent from 1979. Increases of approximately 7 and 8 percent were forecast for California and Washington respectively, while the Oregon crop was expected to be the same as in 1979. These pears are usually shipped for fresh markets during the winter and spring.

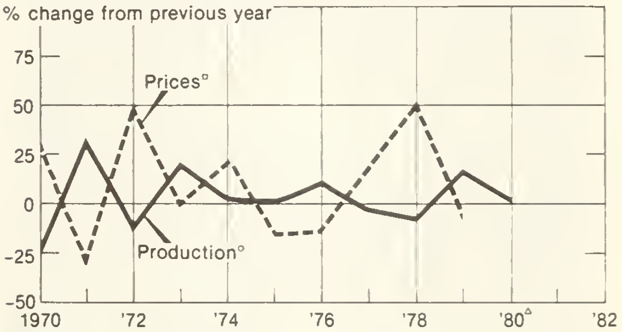
Most of the remaining U.S. pear supply is from Michigan and New York. New York's crop was expected to be 6 percent larger than a year ago, while Michigan pear production was forecast to be 8 percent smaller.

Early Season Prices Lower

California's harvest of Bartlett pears got underway earlier than last year. Through mid-August, fresh shipments from California were running substantially ahead of last year's pace. Consequently, prices for fresh Bartletts, f.o.b. Sacramento, California, have been considerably lower than a year ago. In early August, the price was quoted at $10.95 a standard box, size 90-135, compared with $11.90 a year earlier. More Bartlett pears are expected for fresh use this year. Thus, prices are likely to remain below last year's levels.

Despite a larger carryover stock, the California Canning Pear Association and processors have agreed on a schedule of prices, with an average payment of $175.00 per ton for No. 1 canning Bartletts, compared with $172.50 a year ago. So far deliveries of Bartlett pears to California canners have been considerably larger this season than last. The California pack of canned pears could be larger than last season's 3.4 million cases (24-2-1/2 's). This pack, combined with larger carryover stocks, will mean a total supply of canned pears larger than last season's 13.2 million cases (24-2-1/2 's). Because of the increase in processing costs, the BLS wholesale price of canned pears has been moderately higher than a year ago, with the July price at $7.96 a case (12-2-1/2's), compared with $7.65 last year. To stimulate sales, canners have offered promotional allowances. In view of larger supplies, prices during the coming season are not expected to increase appreciably.

U.S. Pears:
Changes in Production and Prices



°Season average prices. °Utilized production. △1980 indicated production

USDA Neg ESCS 638-80 (8)

Good Export Markets

Exports of both fresh and canned pears were sharply above year-earlier levels.

During the July 1979-June 1980 period, the United States exported 41,088 metric tons of fresh pears, up 10 percent from a year earlier. Canada, which buys more than half the total fresh exports, purchased 33 percent more than a year ago. Fresh exports to Latin America also increased, while a sharp decrease was recorded for the European markets.

Exports of canned pears during the 1979/80 season (June-May) totaled 3,296 metric tons, up 25 percent from the previous season. Markets were generally good throughout the world, except in Europe. Exports to Canada were up 16 percent from the 1978/79 season, while shipments to Latin America were 85 percent larger. This year, European pear crop prospects have been hurt by weather, particularly in France and Spain, so our canned exports to Europe may improve somewhat.

Plums and Prunes

California's plum crop was forecast at 170,000 tons (154,000 metric tons), 3 percent less than last year. Quality was good with good fruit sizes but fruit set is down. However, the late varieties suffered some weather damages. Because of the smaller crop, plum shipments were running moderately behind last year's pace. F.o.b. prices from Central and Southern San Joaquin Valley points increased sharply after the damage and began to moderate recently. During the week ending August 23, the f.o.b. price for Coselman plums was reported at $11.90 per 28-lb carton, compared with $6.40 a year ago.

Production of prunes and plums in Idaho, Michigan, Oregon, and Washington is forecast at 73,500 tons (66,700 metric tons), up 18 percent from 1979. Prospects are up in Oregon and Washington with increases of 23 and 40 percent respectively. A light fruit set occurred in Michigan, with the crop down 7 percent, while Idaho's estimate, at 7,500 tons, is unchanged from 1979. The opening f.o.b. price for fresh prunes in Yakima Valley, Washington, was $6.65, sharply higher than a year ago because of small shipments. However, prices have declined. On August 27, f.o.b. prices for Italian type prunes (No. 1 grade, 1-1/4 inch minimum) were quoted at $4.70 per 30-pound carton, 22 percent below a year ago. With the sharply larger crop, prices are expected to remain below those last year.

California dried prune production is forecast at 160,000 tons (145,000 metric tons), up 20 percent. Shipments for the crop year ending July 31, 1980 were about the same as last year's pace as the small decline in exports was offset by the increase in domestic shipments. The unshipped supply as of August 1 was sharply above last year. Unshipped quantities, combined with larger production, bring the total 1980/81 supply above the previous season. However, the Prune Administrative Committee has recommended that none of the 1980 marketable prune crop in California be set aside as reserve.

Because of larger supplies, wholesale prices of dried prunes have been down since February.

Strawberries

Smaller Crop

This season's crop is estimated at 544.2 million pounds, 3 percent smaller than in 1979. Fresh imports from Mexico during the first half of 1980 totaled 3,796 metric tons, down 65 percent from a year ago. Thus, smaller supplies have resulted in sharply higher prices to growers. Fresh shipments are finished for the season in all States except California. Even with a smaller crop, total fresh strawberry shipments through mid-August were well above last year.

Through August 9, deliveries of strawberries to California freezers totaled 126.6 million pounds, up 12 percent from last year. California growers received 27 cents per pound (stemmed and delivered to the processing plant), compared with 29 cents a year ago. Processing in the Pacific Northwest is through for the season, with the total pack in Washington down and in Oregon up moderately. The following table compares strawberry deliveries to processors this season and last.

The wholesale price of frozen strawberries in July was $6.33 (12-10 oz.), 11 percent above a year earlier. Higher costs of sugar, fruit, and processing will continue to strengthen frozen strawberry prices.

Table 8—Strawberry deliveries for freezing to August 9

State	1979	1980
	Million pounds	
California	113.2	126.6
Michigan	5.6	3.9
Oregon	39.4	43.0
Washington	12.8	12.2
Total 4 States	171.0	[1] 185.6

[1] May not add due to rounding.

Source: America Institute Food Distribution.

CITRUS

The final forecast of the 1979/80 citrus crop was a record 16.4 million tons (14.9 million metric tons), up 23 percent from last season and 15 percent from the 1977/78 crop. The record orange crop accounted for most of the increase. The proportion of oranges also increased from 69 to 72 percent of the total citrus crop. Consequently, on-tree returns for oranges have been sharply below year-earlier levels.

Oranges

Remaining Supplies of California-Arizona Valencias Substantially Larger

The final 1979/80 California-Arizona Valencias forecast is 29.6 million boxes, 60 percent above last season. Even with sharply larger utilization, remaining supplies as of August 14 were up almost 12 percent from a year ago. Exports have shown the largest absolute increase, and now account for 29 percent of total utilization. Domestic shipments to fresh markets have increased 65 percent from a year ago, but account for 35 percent of total utilization. Of total utilization, the relative share for processing remained the same.

Sharply Lower Fresh Orange Prices

Because of a record crop, prices received by growers for fresh oranges have been sharply below last season's high levels. In August on-tree returns for fresh market averaged $3.40 a box, compared with $7.00 a year ago. However, Valencia prices have strengthened in response to seasonally reduced supplies, and continue to rise. Nevertheless, large supplies of summer fruit have moderated Valencia increases. Consequently, Valencia prices will remain below year-earlier levels.

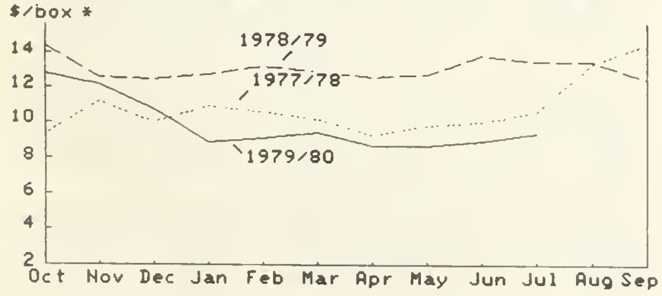
Because of seasonally reduced supplies, retail prices of fresh oranges have steadily advanced, but remained below last year. The BLS July 1980 CPI-U for fresh oranges stood at 273.9 (1967=100), up 3.6 percent from June, but still 12.6 percent below a year ago. Even with large noncitrus supplies, retail prices are expected to continue to advance until the 1980/81 harvest of other oranges.

Exports Strong

With larger supplies and lower prices, U.S. exports of fresh oranges from November 1979 through June 1980 totaled 322, 032 metric tons, up 42 percent from a year ago. Canada and Hong Kong, the two principal customers, accounted for three-fifths of the total exports. So far this season, Canada has purchased 20 percent more than a year ago and Hong Kong 28 percent more. Shipments to Europe have been up almost 283 percent, with the Netherlands leading the increase. Exports to Japan improved steadily and in May jumped sharply because of the expanded import quota that became effective in April. Through June this season, fresh orange exports to Japan have increased 20 percent above a year ago.

During the first 6 months of 1980, U.S. imports of fresh oranges totaled 11,018 metric tons, down 48 percent from a year ago. Sharp decreases were recorded for both Israel and Mexico, reflecting record supplies of U.S. oranges.

Oranges: U.S. Average Price Received by Growers



* F.O.B. Packed Fresh.

USDA NEG. ESCS 156-80 (8)

Sharply Larger Supplies of Frozen Concentrated Orange Juice

Florida's pack of frozen concentrated orange juice (FCOJ) during the 1979/80 season totaled 247.1 million gallons (excluding reprocessed), up 20 percent from the preceding season. The sharply larger pack reflects the record orange crop and relatively good juice yield. The all orange FCOJ juice yield in Florida for the 1979/80 crop is estimated at 1.33 gallons of 45 degree brix concentrate per box, compared with 1.34 gallons last season. The larger carryover stocks combined with the record pack have made the total 1979/80 supply sharply larger despite reduced imports.

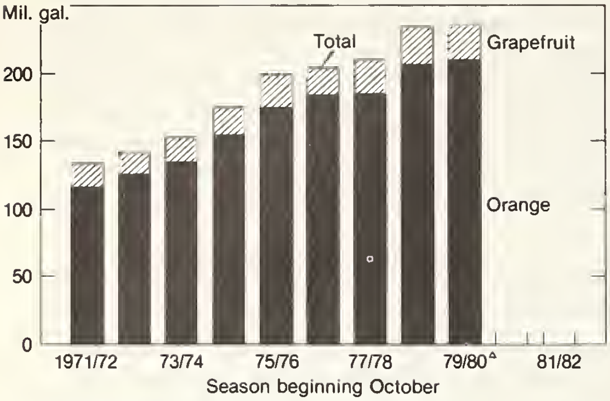
Florida packers reduced effective prices to $2.80 per dozen 6-ounce can (f.o.b. Florida canneries) in early June after several promotional allowances. After the promotions, prices returned to $3.25 in mid-July. This compares with $3.50 to $3.60 a year ago. Although sales have improved somewhat, movement so far is still behind the rate of packing. As of August 16, stocks-on-hand totaled 121 million gallons, 28 percent above a year ago. In mid-August, a major Florida citrus packer reduced effective prices to $2.80 again on orders placed August 29 to September 12 for delivery by September 26. If movement does not improve significantly, FCOJ carryover could approach 50 to 60 million gallons, compared with 37.4 million last season.

Larger Pack of Chilled Orange Juice

Florida's output of chilled orange juice grew rapidly through August 16, totaling 213.8 million gallons (excluding single-strength reprocessed), up 14 percent from a year ago. Of this total, 134.8 million gallons were processed from fresh oranges, up 8 percent from last season. The remaining quantity, nearly 80 million gallons, came from reconstituted bulk-frozen concentrate, up sharply from last season. The 1979/80 pack will set another record and is expected to approach 235 million gallons, compared with 206 million the preceeding season.

Movement of chilled orange juice will probably also set a record. While export demand was only moderately higher, movement to the domestic markets was up substantially. With carryover at the

Florida Packs of Chilled Citrus Juice



Includes pack from fresh and frozen concentrate. △Pack through August 9.
Source: Florida Canners Processors Association.

USDA Neg. ESCS 2189-80 (8)

beginning of the season near last year's level, the large pack more than offsets increased movement, leaving stocks-on-hand 8 percent larger than mid-August a year ago.

Moderately Larger Supplies Of Canned Orange Juice

With the record crop, Florida citrus packers have also processed more canned single-strength orange juice, 133 million cases (24-2's) through August 16, an increase of 4 percent from last year. Including larger carryover stocks at the beginning of the season, total supplies are moderately larger. Florida f.o.b. prices have been steady at $8.00 a dozen (46-ounce cans) since mid-June, the same as a year ago. In August Florida Citrus packers announced a promotional allowance to reduce f.o.b. prices to $7.00-$7.10 on orders placed from August 25 to September 12. Movement has been running only moderately ahead of last season's pace. Nevertheless, the stocks-on-hand as of August 16 were almost 6 percent above a year ago.

Grapefruit

Sharply Larger Summer Supplies

The final forecast of the 1979/80 grapefruit crop is 73.2 million boxes (2.71 million metric tons), 9 percent more than last season. Most grapefruit remaining for harvest is in Southern California. Because of the sharply larger California crop, supplies will be adequate until the Florida harvest gets underway in late September. Currently, Florida groves are generally in good to excellent condition.

Since April, on-tree returns for fresh grapefruit have averaged below a year ago. In August on-tree returns for California grapefruit for fresh sale averaged $5.32 per box, compared with $10.16 a year earlier. With large supplies of grapefruit and summer fruit, prices are expected to remain below last year's high levels.

Exports Down Moderately

Fresh grapefruit exports during the 10 months ending June 30, 1980, totaled 247,069 metric tons, down 5 percent from last year. A 20-percent decrease in shipments to Japan, our leading customer, was chiefly responsible; Japan bought only 45 percent of the total export, compared with 54 percent a year earlier. The depreciation of the Japanese Yen against the U.S. dollar, coupled with sharply higher early-season prices, caused the decline. However, exports to Canada and Europe have shown substantial increases. France and the Netherlands account for almost 83 percent of the total shipments to Europe. Exports to Italy, although relatively small, have increased 362 percent. With the seasonal decline in supplies of grapefruit, total exports are not expected to catch up to last season.

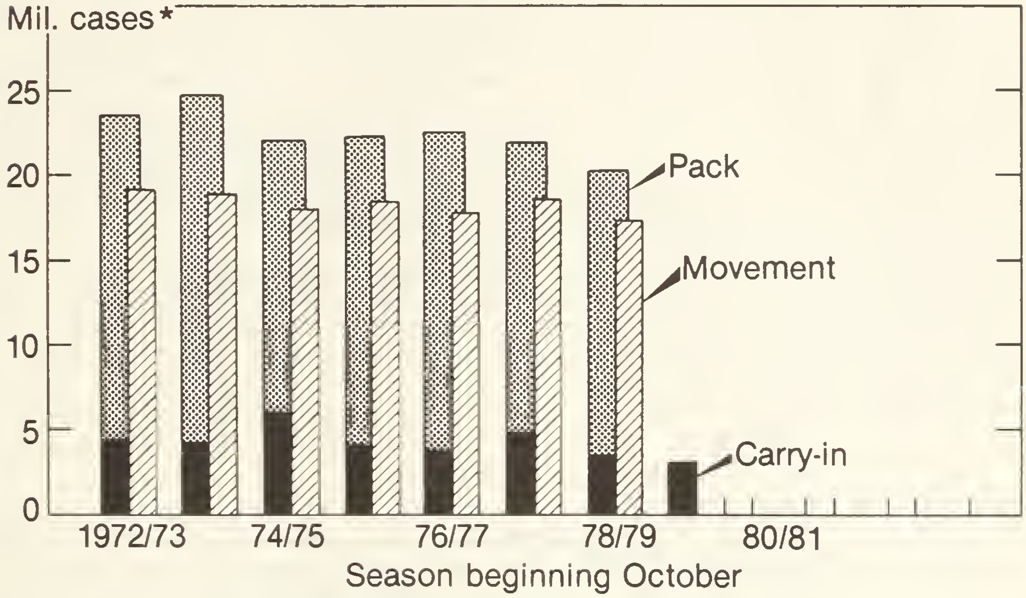
Grapefruit Juice Pack

In response to good demand, the pack of frozen concentrated grapefruit juice (FCGJ) was 19.5 million gallons (excluding reprocessed) for 1979/80, up 35 percent from last season. But because of higher prices, movement was up only moderately. The current price, $3.35 per dozen 6-ounce cans (unadvertised brands, Florida canneries), compares with $2.80 a year ago. Thus, even with much smaller carryover at the beginning of the season, August 16 stocks-on-hand were almost 36 percent above those year-earlier.

The pack of canned grapefruit juice totaled 16.3 million cases (24-2's) this season, down slightly from last year. The price was quoted at $7.50 per dozen (46-ounce cans) in mid-August, compared with $6.00 a year ago. Consequently, movement has been considerably behind last year's, and promotional allowances have been offered in several parts of the country to reduce effective price to $6.50 per dozen (46-ounce cans). As of August 16 stock-on-hand was 16 percent larger than a year ago.

Through August 16, the Florida citrus packers had processed 25.6 million gallons of chilled grapefruit juice (excluding single-strength reprocessed), almost 5 percent more than a year ago. Movement, by contrast, was near last year's level, so stocks are up sharply.

Florida Canned Grapefruit Juice Pack, Movement and Stocks



* 24/2's. Source: Florida Canners Processor Association

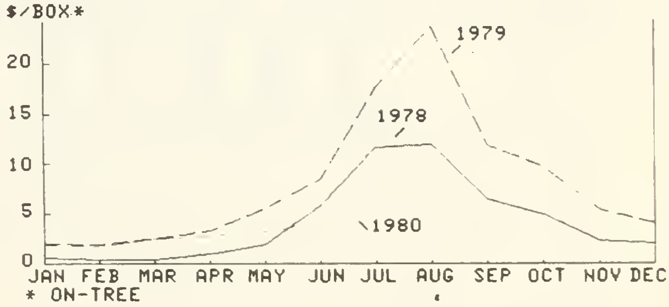
USDA Neg. ESCS 131-80 (8)

Lemons

The final forecast of the 1979/80 lemon crop is 20.7 million boxes, 9 percent more than last season. Domestic shipments of fresh lemons were up slightly, while processing use was increased greatly. Of the total crop, 49 percent was processed, compared with 39 percent a year ago. Foreign markets have been weak, with the total export for the 10 months ending June 30 down almost 22 percent from a year earlier. Competing supplies from Italy and Spain caused the U.S. drop. Japan—our largest customer—has also cut down the purchases considerably.

In response to seasonally good demand, prices of lemons for the fresh market have advanced. In August, on-tree returns were $13.70 a box, up from $7.50 in July. But August prices were still only half the extremely high prices of last year. However, with sharply higher prices early in the season, f.o.b. prices for fresh lemons for the 1979/80 season averaged $9.76 per carton, compared with $9.47 a year ago. Lemon prices generally decline in the fall. Although the official USDA 1980/81 estimate is not due until October 10, industry reports indicate a sharply larger lemon crop in prospect.

All Lemons: U.S. Average Price Received by Growers



USDA NEG. ESCS 2081-80 (8)

TREE NUTS

Smaller Almond Crop

The August 1 forecast for California almond production, at 340 million pounds (154,000 metric tons), was 10 percent below last year's record crop. Set is down from last year but kernel weights are the heaviest on record. Bearing acreage went up from 307,684 acres in 1978 to 322,602 acres in 1979, and is estimated at 326,400 acres for 1980.

According to the Almond Board of California, shipments of shelled almonds during the 1979/80 season totaled 312.4 million pounds, up 42 percent from 1978/79. Sharply larger exports contributed to the increase, while domestic shipments were almost unchanged. Exports accounted for almost 72 percent of the total almond shipment. West Germany, our largest customer, bought almost 90 percent more than last year and accounted for 40 percent of total U.S. exports. Smaller 1979 almond crops in Italy and Spain, Europe's main almond producing countries, have strengthened demand for U.S. almonds. Shipments to Russia also showed strong gains this season. However, Japan, our second largest customer, increased purchases only slightly. Taiwan recently dropped its tariff on U.S. almonds enhancing our export prospects there.

The 1980/81 world almond crop is currently estimated at 532 million pounds, up almost 11 percent from 1979. All major foreign producing countries particularly Italy and Spain, show sharp gains. However, stocks are not expected to be much larger than a year ago, and so, total world supply for the 1980/81 season will not increase appreciably.

Because of good demand, the average price received by almond growers for the 1979 crop was a record $1.54 per pound (kernal weight), 6 percent above a year ago. Even with larger supplies, prices for the 1980 crop are not expected to fall appreciably because world demand looks favorable.

Slightly Larger California Walnut Production in Prospect

The August 1 forecast for the 1980 California walnut crop was 215,000 tons (195,000 metric tons), 3 percent above the 1979 crop and 34 percent above 1978. Recent hot weather is stressing trees but nut quality has not been reduced.

According to the Walnut Marketing Board, 1979/80 shipments of in-shell walnuts totaled 138 million pounds, up 30 percent from 1978/79. Exports, which accounted for 61 percent of total shipments, increased 40 percent. Deliveries to the domestic markets also increased 17 percent, but its share of total in-shell deliveries decreased to 39 percent from 44 percent in 1978/79.

Deliveries of shelled walnuts to the domestic market which accounted to 91 percent of total shelled shipments, increased 9 percent from 1978/79. Export shipments although a relatively small quantity, showed a sharp increase. Europe, our leading outlet, purchased 112 percent more inshelled walnuts and 38 percent more shelled walnuts during the 1979/80 season.

In response to the larger crop, prices received by walnut growers averaged $819 per ton for the 1979 crop, down sharply from 1978. New crop prices have not been established. However, even with a larger crop, prices are not expected to weaken appreciably during the coming season. A smaller crop of almonds and a smaller supply of Brazil nuts, which compete with walnuts for mixers, could strengthen walnut prices.

Table 9—Tree nuts: Production, 1978, 1979, and indicated 1980

Crop and State	1978	1979	1980
	Tons		
Almonds:			
California	142,700	303,716	274,637
Walnuts, English:			
California	160,000	208,000	215,000

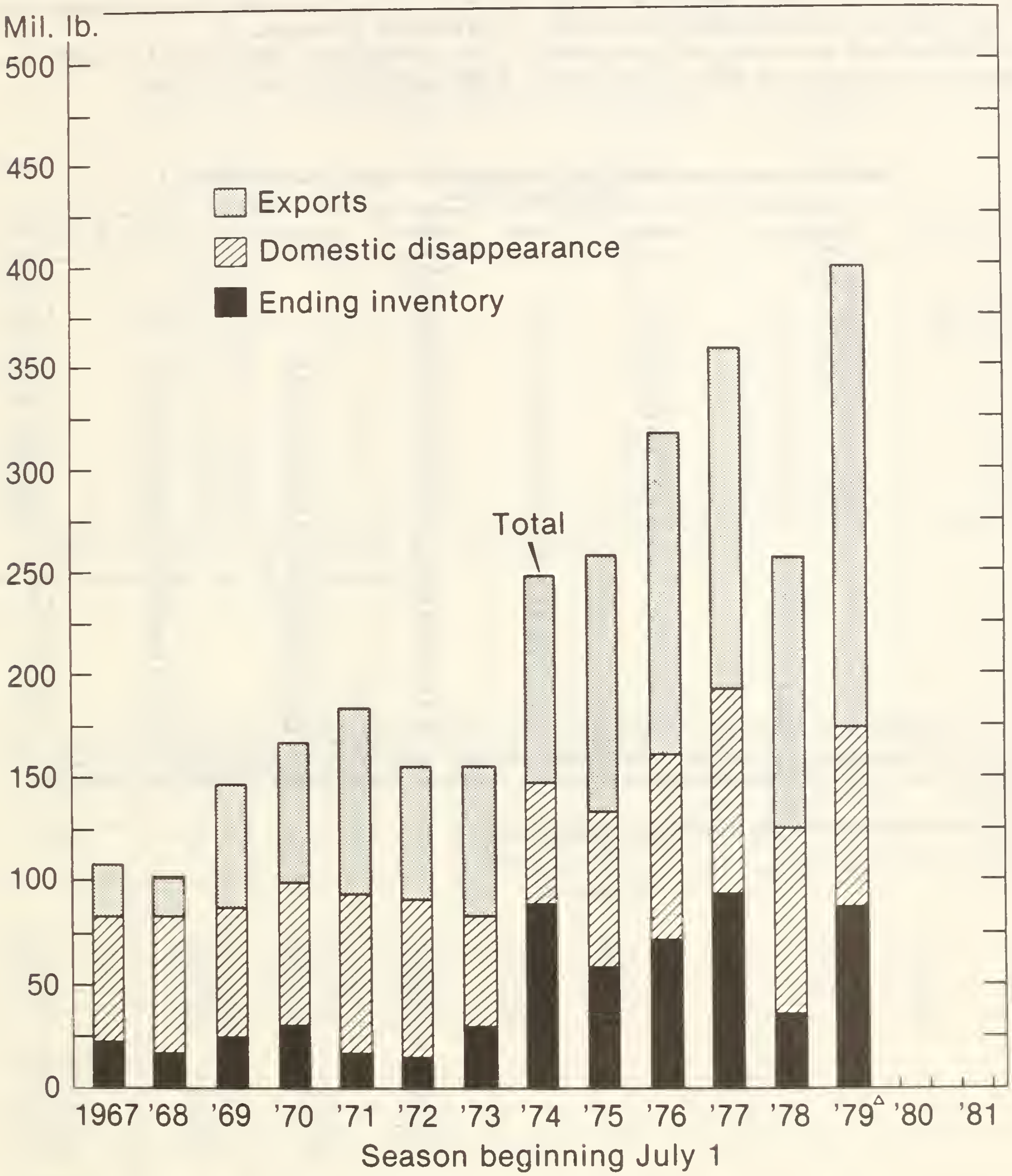
Source: Crop Production, ESCS.

Table 10—Tree nuts in cold storage, June 30

Kinds	1978	1979	1980
	Million pounds		
Almonds:			
In-shell	1.2	1.2	1.1
Nutmeats	66.6	30.8	42.5
Walnuts:			
In-shell	10.8	12.5	20.2
Nutmeats	14.6	14.6	21.1
Filberts:			
In-shell	1.3	.9	.9
Nutmeats	1.2	1.4	1.3
Pecans:			
In-shell	26.5	66.6	39.3
Nutmeats	26.3	32.5	29.6
Other tree nuts:			
In-shell	5.2	8.4	7.6
Nutmeats	11.2	10.2	12.4
Total:			
In-shell	45.0	89.6	69.1
Nutmeats	119.9	89.5	106.9

Source: Cold Storage Report, ESCS.

U.S. Almond Supply and Utilization



△Preliminary. Source: Almond Board of California.

USDA

Neg. ESCS 2188-80 (8)

PER CAPITA TREE NUT CONSUMPTION

Per capita consumtion of tree nuts in the United States increased to 1.84 pounds during the 1979/80 crop year from 1.77 pounds the year before. More almonds and walnuts were eaten, and consumption of Macadamias reached a new high of 0.033 pound per person. Consumption of filberts and pecans was down from a year ago, while that of imported tree nuts remained unchanged.

The following tables gives detailed historical data on per capita consumption of tree nuts.

Table 11—Tree nuts (shelled basis): Per capita consumption, crop year, average 1950-54 and 1955-59, and 1960-79[1]

Crop year[2]	Almonds	Fiberts	Pecans	Walnuts	Macadamia	Other[3]	Total
	Pounds						
1950-54 average	0.27	0.07	0.37	0.40	---	0.53	1.64
1955-59 average	.23	.07	.33	.34	---	.55	1.52
1960	.30	.07	.36	.32	0.004	.52	1.57
1961	.28	.07	.44	.30	.006	.53	1.63
1962	.27	.05	.27	.32	.008	.56	1.48
1963	.27	.05	.45	.32	.010	.47	1.57
1964	.30	.05	.43	.41	.012	.56	1.76
1965	.31	.06	.52	.33	.013	.56	1.79
1966	.33	.07	.41	.37	.013	.54	1.73
1967	.30	.07	.40	.37	.012	.59	1.74
1968	.33	.07	.39	.33	.016	.68	1.82
1969	.30	.05	.42	.34	.015	.58	1.71
1970	.34	.06	.37	.38	.020	.60	1.77
1971	.37	.07	.38	.42	.021	.62	1.88
1972	.37	.07	.38	.40	.019	.72	1.96
1973	.26	.10	.36	.40	.017	.58	1.72
1974	.27	.04	.35	.43	.023	.46	1.57
1975	.36	.08	.34	.52	.026	.61	1.94
1976	.43	.08	.30	.52	.027	.56	1.92
1977	.46	.08	.31	.52	.027	.34	1.74
1978[4]	.41	.09	.36	.40	.029	.48	1.77
1979[4]	.45	.08	.30	.50	.033	.48	1.84

[1] Civilian consumption only. Beginning 1959, includes Alaska and Hawaii. [2] Beginning August of year indicated for filberts and walnuts, July for all others. [3] Includes the following nuts; Brazil, pignolia, pistachios, chestnuts, cashews, and miscellaneous. [4] Preliminary.

Note: See September 1970 (TFS-176) *Fruit Situation* for data prior to 1950.

Table 12—Noncitrus fruit and berries: Production and utilization, United States, crops of 1963-79

Year	Utilized Production	Utilization of sales			
		Fresh		Processed[1]	
		Quantity	Percentage	Quantity	Percentage
	1,000 tons	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
1963	10,170	3,619	35.6	6,551	64.4
1964	10,803	3,722	34.5	7,081	65.5
1965	11,059	3,669	33.2	7,390	66.8
1966	10,427	3,639	34.9	6,788	65.1
1967	8,863	3,220	36.3	5,643	63.7
1968	10,187	3,583	35.2	6,604	64.8
1969	11,433	3,877	33.9	7,556	66.1
1970	10,138	3,536	34.9	6,602	65.1
1971	10,795	3,591	33.3	7,204	66.7
1972	8,667	3,275	37.8	5,392	62.2
1973	11.205	3,561	31.8	7,644	68.2
1974	11,508	3,804	33.1	7,704	66.9
1975	11,939	4,261	35.7	7,678	64.3
1976	11,454	4,131	36.1	7,323	63.9
1977	11,892	4,110	34.6	7,782	65.4
1978	12,194	4,326	35.5	7,868	64.5
1979[2]	13,360	4,506	33.7	8,854	66.3

[1] Processed includes culls and cannery diversion for clingstone peaches. [2] Preliminary.

Source: Noncitrus Fruits and Nuts and Vegetables, ESCS.

Table 13—Production and utilization of apples, avocados, and cranberries, United States, crops of 1975-79

Commodity and year	Production		Utilization						
				Processed (fresh equivalent)					
	Total	Utilized[1]	Fresh	Canned	Juice and cider	Frozen	Dried	Other[2]	Total processed[1]
	Thousand tons								
Apples:									
1975	3,765.0	3,551.3	2,178.5	513.4	595.8	103.3	114.8	45.6	1,372.8
1976	3,236.6	3,234.0	1,958.4	460.0	554.6	110.2	114.6	36.2	1,275.6
1977	3,336.3	3,321.5	1,896.8	537.4	633.6	80.5	112.8	60.5	1,424.7
1978	3,803.7	3,777.8	2,110.5	611.8	747.4	103.7	110.5	93.2	1,666.6
1979	4,044.5	4,031.8	2,150.4	667.4	954.5	68.3	131.8	59.4	1,881.4
Avocados:[3]									
1975/76 . . .	87.4	87.4	86.1	---	---	---	---	---	1.3
1976/77 . . .	141.1	141.1	140.7	---	---	---	---	---	.4
1977/78 . . .	117.7	117.7	117.7	---	---	---	---	---	---
1978/79 . . .	146.1	146.1	146.1	---	---	---	---	---	---
1979/80 . . .	96.0	96.0	96.0	---	---	---	---	---	---
Cranberries:[4]									
1975	103.8	103.8	15.5	---	---	---	---	---	72.2
1976	120.4	120.4	20.4	---	---	---	---	---	87.8
1977	105.1	105.1	20.3	---	---	---	---	---	84.8
1978	122.9	122.9	20.2	---	---	---	---	---	102.7
1979	123.8	123.8	15.1	---	---	---	---	---	108.7

[1] Some totals do not add due to rounding. [2] Apples: Includes vinegar, wine, jam, fresh slices for pie making, etc. [3] Includes some processing. Utilized cranberries include shrinkage.

Source: Noncitrus Fruits and Nuts Midyear Supplement, ESCS.

Table 14—Apples, commercial crop[1]: Production, and season average prices received by growers, 1978, 1979, and indicated 1980 production

State and area	Production			Price per pound	
	1978[2]	1979[2]	1980	1978	1979
	Million pounds			*Cents*	
Eastern States:					
Maine	75.0	86.0	85.0	13.2	14.6
New Hampshire	60.0	58.0	62.0	13.4	12.7
Vermont	49.0	49.0	55.0	12.8	12.1
Massachusetts	105.0	95.0	100.0	13.8	15.5
Rhode Island	6.0	5.0	5.5	14.1	13.2
Connecticut	50.0	45.0	42.0	13.6	14.7
New York	1,080.0	1,035.0	1,070.0	8.5	10.0
New Jersey	90.0	110.0	120.0	11.3	10.6
Pennsylvania	400.0	535.0	570.0	8.9	8.7
Delaware	14.5	13.0	13.5	9.3	9.4
Maryland	85.0	85.0	87.0	10.4	11.7
Virginia	515.0	470.0	420.0	8.0	8.5
West Virginia	295.0	260.0	260.0	8.6	8.2
North Carolina	324.0	362.0	380.0	7.9	7.2
South Carolina	22.0	35.0	33.0	11.7	13.8
Georgia	22.0	35.0	36.0	11.5	11.2
Total	3,192.5	3,278.0	3,339.0		
Central States:					
Ohio	140.0	105.0	170.0	14.5	15.7
Indiana	64.0	75.0	69.0	13.6	14.7
Illinois	89.0	110.0	105.0	12.8	12.4
Michigan	920.0	680.0	900.0	7.6	7.8
Wisconsin	66.0	54.0	62.0	12.1	13.8
Minnesota	28.0	15.0	22.0	15.1	18.0
Iowa	8.9	12.1	11.5	13.8	13.5
Missouri	40.0	70.0	63.0	15.3	13.1
Kansas	10.0	15.0	14.0	11.1	9.5
Kentucky	15.0	21.0	19.0	12.6	11.5
Tennessee	8.0	10.0	9.0	14.2	14.7
Arkansas	13.0	24.0	20.0	10.9	11.5
Total	1,401.9	1,191.1	1,464.5		
Western States:					
Idaho	130.0	125.0	125.0	14.7	15.0
Colorado	41.0	100.0	80.0	10.6	8.0
New Mexico	17.0	14.0	10.0	9.7	13.0
Utah	35.0	51.0	52.0	11.0	12.8
Washington	2,148.0	2,560.0	2,600.0	12.6	12.2
Oregon	142.0	170.0	170.0	11.1	15.6
California	500.0	600.0	520.0	9.2	10.1
Total	3,013.0	3,620.0	3,557.0		
United States	7,607.4	8,089.1	8,360.5	10.4	10.8

[1] In orchards of 100 or more bearing trees. [2] Includes unharvested production and exceeds cullage (million pounds): United States 1978-53.2, 1979-25.6.

Source: Production, CROP PRODUCTION, Crop Reporting Board, ESCS, and prices, NONCITRUS FRUITS & NUTS, Crop Reporting Board, ESCS.

Table 15—Apples, commercial crop[1]: Production by varieties, United States, 1978, 1979, and 1980

Variety	1978	1979	1980
	Million pounds		
Cortland	159.1	145.5	166.5
Delicious	2,652.5	2,953.3	3,134.7
Golden Delicious	1,238.9	1,440.3	1,360.8
Gravenstein	65.0	74.0	35.0
Jonathan	401.8	427.2	455.3
McIntosh	765.0	683.8	742.0
Northern Spy	109.6	122.8	109.5
R.I. Greening	173.0	139.0	148.0
Rome Beauty	568.5	593.3	615.2
Stayman	227.9	234.6	271.8
Winesap	161.7	139.7	127.0
Yellow Newtown	165.0	219.0	192.0
York Imperial	349.5	354.2	353.1
Other	569.9	562.4	649.6
Total[1]	7,607.4	8,089.1	8,360.5

[1] Commercial crops refer to the total production of apples in orchards of 100 or more bearing trees. Data include quantities of mature fruit not harvested and excess cullage of harvested fruit not included in data in table 14.

Source: Commercial Apples, ESCS.

Table 16—Processed apples: Season average price per ton received by growers, by type of use, principal States, 1977-79

Use and State	1977	1978	1979
		Dollars	
Canning:			
Michigan	136.00	124.00	134.00
New York	118.00	111.00	118.00
Pennsylvania	136.00	111.00	117.00
Virginia	133.00	99.30	110.00
Washington	140.00	164.00	133.00
West Virginia	140.00	105.00	108.00
United States	133.00	119.00	125.00
Juice and cider:			
California	149.00	143.00	155.00
Michigan	92.00	90.00	102.00
New York	78.00	86.60	82.00
Pennsylvania	92.00	88.00	91.00
Virginia	86.00	86.00	80.00
Washington	150.00	170.00	108.00
United States	109.00	110.00	103.00
Frozen:			
Michigan	142.00	128.00	130.00
New York	128.00	125.00	142.00
United States	138.00	126.00	133.00
Dried:			
California	147.00	156.00	165.00
Washington	130.00	176.00	142.00
United States	132.00	154.00	143.00

Source: Noncitrus Fruits and Nuts Supplement. ESCS.

Table 17—Apples, Yakima Valley, Washington: Monthly average prices per carton tray pack, extra fancy, f.o.b. shipping point, 1978/79 and 1979/80[1]

Month	Red delicious				Golden delicious			
	Regular storage		C.A. storage		Regular storage		C.A. storage	
	1978/79	1979/80[2]	1978/79	1979/80[2]	1978/79	1979/80[2]	1978/79	1979/80[2]
	Dollars							
August	---	---	---	14.80	---	---	---	10.50
September	10.20	12.50	---	---	10.18	9.55	---	---
October	9.19	9.24	---	---	8.92	8.41	---	---
November	9.96	11.13	---	---	9.35	8.25	---	---
December	10.00	11.25	---	---	9.31	8.05	---	---
January	10.15	11.33	10.75	---	8.95	7.77	---	---
February	10.25	11.87	11.09	---	8.57	7.67	9.66	---
March	---	---	10.80	12.95	---	---	9.74	10.38
April	---	---	10.50	13.02	---	---	9.75	10.19
May	---	---	10.26	13.24	---	---	9.91	9.95
June	---	---	10.25	14.90	---	---	10.00	11.91
July	---	---	10.49	15.64	---	---	11.88	16.31

[1] Apples sizes 80's-125's. [2] Preliminary January through July 1980.

Source: Agricultural Marketing Service.

Table 18—Grapes: Total production and season average prices received by growers in principal States, 1978, 1979, and indicated 1980 production

State	Production[1]			Price per ton[3]	
	1978	1979	1980	1978	1979
	Tons			*Dollars*	
New York	188,000	165,000	185,000	244.00	234.00
Pennsylvania	57,500	55,500	56,000	232.00	218.00
Ohio	12,000	12,000	13,500	212.00	207.00
Michigan	67,500	58,500	55,000	223.00	237.00
Missouri	3,300	4,500	5,200	231.00	310.00
North Carolina	6,800	5,800	6,000	300.00	258.00
Georgia-South Carolina	5,100	5,200	5,800	228.00	295.00
Arkansas	8,200	8,200	8,300	217.00	216.00
Arizona	14,300	13,500	12,400	943.00	930.00
Washington	187,000	102,800	127,000	191.00	205.00
California:					
Wine	1,706,000	1,821,000	1,800,000	210.00	214.00
Table	393,000	417,000	460,000	342.00	310.00
Raisin	1,918,000	2,320,000	2,100,00	229.00	239.00
Dried[2]	228,500	302,300	---	1,067.00	1,151.00
Not dried	912,000	944,000	---	217.00	219.00
All	4,017,000	4,558,000	4,360,000	232.00	236.00
United States	4,566,700	4,989,000	4,834,200	233.00	237.00

[1] Includes unharvested production and excess cullage (tons): U.S. 1978-248,900 (248,000 tons fresh equivalent raisin type in California laid, but not harvested due to severe weather damage); 1979-300. [2] Dried basis, 1 ton of raisins is equivalent to 4.40 tons of fresh grapes for 1978 and 4.55 for 1979. [3] Price derived from unrounded data for California all varieties and raisin varieties.

Source: Production, CROP PRODUCTION, Crop Reporting Board, ESCS, and prices, NONCITRUS FRUITS & NUTS, Crop Reporting Board, ESCS.

Table 19—Peaches: Total production and season average prices received by growers, 1978, 1979, and indicated 1980 production

State	Production			Price per pound	
	1978[1]	1979[1]	1980	1978	1979
	Million pounds			*Cents*	
Southern States:					
North Carolina	45.0	50.0	45.0	16.0	16.3
South Carolina	315.0	350.0	315.0	15.5	13.9
Georgia	120.0	135.0	120.0	15.6	11.3
Alabama	15.0	14.0	14.0	16.6	18.5
Mississippi	4.0	3.0	2.8	20.0	20.0
Arkansas	37.0	36.0	38.0	12.5	13.8
Louisiana	6.5	7.0	4.0	20.0	23.0
Oklahoma	8.5	12.0	10.0	14.2	15.2
Texas	40.0	36.0	10.0	17.0	20.0
Total Southern States	591.0	643.0	558.8		
California:					
Clingstone[2]	1,230.0	1,340.0	1,420.0	8.1	8.9
Freestones	394.0	468.0	440.0	11.5	10.9
Total California	1,624.0	1,868.0	1,780.0		
Other States:					
Massachusetts	3.5	3.3	4.0	29.0	32.0
Connecticut	6.3	5.0	6.0	29.0	32.0
New York	16.0	6.7	15.0	18.5	22.2
New Jersey	70.0	95.0	110.0	23.6	16.9
Pennsylvania	85.0	90.0	105.0	15.8	14.8
Ohio	5.0	4.0	12.0	23.7	26.0
Indiana	5.0	4.0	9.0	22.0	22.0
Illinois	16.0	15.0	24.0	21.9	18.5
Michigan	60.0	35.0	55.0	16.0	19.4
Missouri	14.0	12.0	17.0	16.0	21.5
Kansas	5.0	5.0	6.5	17.6	25.0
Delaware	2.3	1.5	2.4	10.5	13.0
Maryland	24.0	21.0	24.0	13.3	14.3
Virginia	40.0	32.0	32.0	14.3	13.2
West Virginia	25.0	24.0	25.0	17.8	16.8
Kentucky	11.0	15.0	15.5	20.0	21.0
Tennessee	8.4	8.5	9.5	16.0	17.0
Idaho	11.0	10.5	13.0	12.5	15.0
Colorado	7.2	14.0	18.5	17.7	20.8
Utah	15.0	18.0	17.0	17.0	17.0
Washington	38.0	31.0	35.0	14.4	16.2
Oregon	13.0	16.0	13.0	14.7	17.9
Total Other States	480.7	466.5	568.4		
United States	2,695.7	2,977.5	2,907.2	12.1	11.7

[1] Includes unharvested production and excess cullage (million pounds): United States, 1978-19.0, 1979-16.0. [2] California clingstones is over the scale tonnage and includes culls and cannery diversions (million pounds): 1978-120.0, 1979-90.0.

Source: Production, CROP PRODUCTION, Crop Reporting Board, ESCS, and prices, NONCITRUS FRUITS & NUTS, Crop Reporting Board, ESCS.

Table 20—Pears: Total production and season average prices received by growers by States and Pacific Coast, variety comparison, 1978, 1979, and indicated 1980 production

States	Production			Price per ton[1]	
	1978	1979[2]	1980	1978	1979
		Tons		*Dollars*	
Connecticut	1,900	1,800	1,600	410.00	450.00
New York	18,500	18,000	19,000	205.00	182.00
Pennsylvania	3,300	2,800	3,700	286.00	294.00
Michigan	13,000	13,000	12,000	208.00	207.00
Colorado	1,950	4,600	4,600	212.00	209.00
Utah	2,600	5,000	3,900	350.00	280.00
Washington	246,000	246,000	255,000	216.00	214.00
Oregon	151,500	205,000	202,000	222.00	202.00
California	288,300	365,300	371,000	221.00	197.00
United States	727,050	861,500	872,800	220.00	204.00
Pacific Coast:					
Washington:					
Bartlett	132,000	153,000	155,000	205.00	180.00
Other	114,000	93,000	100,000	228.00	269.00
Total	246,000	246,000	255,000	216.00	214.00
Oregon;					
Bartlett	55,500	85,000	82,000	195.00	172.00
Other	96,000	120,000	120,000	237.00	224.00
Total	151,500	205,000	202,000	222.00	202.00
California;					
Bartlett	281,000	355,000	360,000	219.00	197.00
Other	7,300	10,300	11,000	278.00	213.00
Total	288,300	365,300	371,000	221.00	197.00
3 States:					
Bartlett	468,500	593,000	597,000	212.00	189.00
Other	217,300	223,300	231,000	234.00	242.00
Total	685,800	816,300	828,000		

[1] All prices. [2] Includes unharvested production and excess cullage (tons); U.S. 1979-500.

Source: Production, CROP PRODUCTION, Crop Reporting Board, ESCS, and prices NONCITRUS FRUITS & NUTS, Crop Reporting Board, ESCS.

Table 21—Prunes and plums: Production and season average prices received by growers in principal States, 1978, 1979, and indicated 1980 production

Crop and State	Production			Price per ton[1]	
	1978	1979	1980	1978	1979
		Tons		*Dollars*	
Prumes and plums:[2]					
Michigan	24,000	14,000	13,000	138.00	207.00
Idaho	7,500	7,500	7,500	206.00	324.00
Washington	21,300	15,000	21,000	149,00	193.00
Oregon	17,000	26,000	32,000	170.00	184.00
Total 4 States	69,800	62,500	73,500	156.00	208.00
Dried prunes;[3]					
California	132,000	133,000	160,000	696.00	850.00
Plums:					
California	154,000	175,000	170,000	370.00	270.00
United States (fresh basis)	634,320	655,100	741,100		

[1] All prices. [2] Mostly prunes, however, estimates include small quantities of plums in all States. Includes unharvested production and excess cullage (tons); total four States: 1978-600. [3] Dry-fresh ratio is 3.11.

Source: Production, CROP PRODUCTION, Crop Reporting Board, ESCS and prices, NONCITRUS FRUITS & NUTS, Crop Reporting Board, ESCS.

Table 22—U.S. exports of selected noncitrus fruits, fresh and canned, by destinations, 1975/76-1979/80 season

Item and season[1]	Canada	Europe				Other	Total
		United Kingdom	EC[2]	Other	Total		
	Metric tons						
Fresh fruit:							
Apples:							
1975/76 . . .	41,629	4,228	614	5,596	10,438	50,189	102,256
1976/77 . . .	54,488	1,438	811	7,695	9,944	55,631	120,063
1977/78 . . .	48,970	8,318	4,976	12,597	25,891	75,078	149,939
1978/79 . . .	49,082	6,164	1,728	10,265	18,158	76,035	143,275
1979/80 . . .	60,124	7,014	2,748	11,806	21,568	154,776	236,468
Pears:							
1975/76 . . .	19,692	179	1,584	4,387	6,150	8,072	33,914
1976/77 . . .	20,691	---	1,170	4,914	6,084	4,857	31,632
1977/78 . . .	14,721	696	2,529	8,586	11,811	9,760	36,292
1978/79 . . .	16,443	74	2,005	9,026	11,105	9,844	37,392
1979/80 . . .	21,829	33	991	6,334	7,358	11,901	41,088
Canned fruit:							
Peaches:							
1975/76 . . .	21,524	158	9,773	4,598	14,529	6,334	42,387
1976/77 . . .	21,027	53	10,985	4,612	15,650	15,208	51,885
1977/78 . . .	22,146	2,375	24,037	5,318	31,730	18,725	72,601
1978/79 . . .	20,276	2,052	12,089	6,527	20,668	24,216	65,160
1979/80 . . .	20,462	196	13,458	5,887	19,541	21,391	61,394
Fruit cocktail:							
1975/76 . . .	19,377	967	3,483	7,646	12,096	6,085	37,558
1976/77 . . .	17,837	814	2,977	7,664	11,455	9,303	38,595
1977/78 . . .	19,562	1,060	4,117	5,598	10,775	12,157	42,494
1978/79 . . .	17,419	457	4,530	7,414	12,401	13,435	43,255
1979/80 . . .	18,378	357	10,195	8,832	19,384	15,913	53,675
Pineapple:							
1975/76 . . .	3,676	359	8,643	2,175	11,177	1,258	16,111
1976/77 . . .	7,175	349	7,689	2,000	10,038	810	18,023
1977/78 . . .	6,772	608	7,381	950	8,939	1,343	17,054
1978/79 . . .	4,375	187	3,624	1,541	5,352	2,042	11,769
1979/80 . . .	6,028	121	2,395	670	3,186	2,087	11,301
Cherries[3]:							
1975/76 . . .	488	166	9,017	93	9,276	1,199	10,963
1976/77 . . .	1,013	28	3,271	26	3,325	705	5,043
1977/78 . . .	1,276	56	3,893	69	4,018	1,029	6,323
1978/79 . . .	1,284	99	4,815	108	5,022	2,044	8,350
1979/80 . . .	554	75	2,275	69	2,419	1,931	4,904
Apricots:							
1975/76 . . .	249	13	58	100	171	439	859
1976/77 . . .	317	12	195	53	260	530	1,107
1977/78 . . .	262	7	183	163	353	603	1,218
1978/79 . . .	381	23	1,057	80	1,160	657	2,198
1979/80 . . .	408	13	130	59	202	629	1,239
Pears:							
1975/76 . . .	1,749	6	299	559	864	954	3,567
1976/77 . . .	1,175	10	307	276	593	1,516	3,284
1977/78 . . .	1,496	5	1,220	401	1,626	1,301	4,423
1978/79 . . .	720	10	529	226	765	1,155	2,640
1979/80 . . .	832	9	366	209	584	1,880	3,296

[1] Season beginning July 1 for fresh apples, pears, and canned cherries; June 1 for other canned items. [2] Belgium-Luxembourg, France, West Germany, Italy, Netherlands, Denmark and Ireland. [3] Excludes Maraschino cherries.

Source: Foreign Agricultural Service.

Table 23—Frozen concentrated citrus juices: Florida canners' stocks, packs, supplies, and movement, current season with comparisons

Item and season	Carryin	Pack		Supply		Movement		Stocks[1]
		To date[1]	Total season	To date[1]	Total season	To date[1]	Total season	
	1,000 gallons							
Grapefruit:								
1975/76 . . .	4,235	[2] 9,389	[2] 9,527	13,624	13,762	7,126	10,456	6,498
1976/77 . . .	3,306	[2] 12,313	[2] 12,416	15,619	15,722	7,871	11,868	7,748
1977/78 . . .	3,854	[2] 14,023	[2] 14,047	17,877	17,901	9,362	13,665	8,515
1978/79 . . .	4,236	[2] 14,443	[2] 14,423	18,679	18,659	11,672	16,367	7,008
1979/80 . . .	2,278	[2] 19,482		21,760		12,246		9,514
Tangerines:								
1975/76 . . .	393	[3] 1,117	[3] 1,127	1,510	1,520	970	1,138	540
1976/77 . . .	382	[3] 947	[3] 947	1,329	1,329	620	1,080	709
1977/78 . . .	249	[3] 1,672	[3] 1,672	1,960	1,960	1,336	1,498	624
1978/79 . . .	462	[3] 1,384	[3] 1,384	1,846	1,846	1,105	1,253	741
1979/80 . . .	593	[3] 2,142		2,735		1,500		1,235

[1] For the 1979/80 season, week ending August 16; 1978/79 August 18; 1977/78 August 19; 1976/77 August 13; 1975/76 August 14. These respective dates include data through the 37th week of each season. [2] Includes receipts of Florida product from non-members and domestic receipts on non-Florida product. [3] Includes domestic receipts of non-Florida product.

Source: Florida Citrus Processors Association.

THE U.S. FRUIT INDUSTRY: A REVIEW OF PROGRESS AND PROSPECTS

by Ben W. Huang and Jo Ellen Kuwamoto*

ABSTRACT: The total production of fruits is expected to increase in the years ahead but the rate of increase will not be as fast as in the last decade. Demand for fruit will continue to increase due mainly to population growth and continued increases in disposable personal income. Per capita fruit consumption in the 1980's is projected to increase for both citrus and noncitrus although at a slower rate than during the last decade. Changes in production and demand will affect the marketing structure and processing industry. This includes more direct purchase of fresh fruit by retailers and institutions, integration of grower-packer-shipper operations, increasing importance in the role of trade and promotion associations, and cooperative marketing, processing, and bargaining associations. Export markets for some fruits will become increasingly important.

Keywords: Fresh fruits, processed fruits, citrus, deciduous, production, utilization, consumption, exports, cooperatives, prospects.

Many changes have occurred in the fruit industry since the last study "Trends and Prospects in the U.S. Fruit Industry" was published in the September 1970 Fruit Situation. There have been significant developments in production, improved processing technology, change in marketing systems, shifts in consumer demand, and competition in the world market. These and other forces have already influenced the character of the U.S. fruit industry. This study presents up-to-date information on significant changes during the last two decades and provides new insights for appraising prospects in the decade ahead.

Geographical Production of Fruit

Fruit production has fluctuated widely during the last two decades. However, total fruit production, including the major berries, rose from an annual average of 18.0 million tons in 1960-62 to 26.7 million tons in 1977-79 (table 1) with increases recorded for all fruits except peaches and apricots.

Output of noncitrus fruit, mostly deciduous, rose from 9.5 million to 12.0 million tons during the last two decades, reflecting increases in both bearing acreage and yield. But noncitrus' share of total fruit production fell from 53.0 percent to 44.8 percent.

Fruit production is concentrated in a few States because of climatic restrictions. Approximately 82 percent of total deciduous fruit output comes from six States: California, Washington, New York, Michigan, Oregon, and Pennsylvania. California leads every State in all deciduous fruit production except apples and cherries. In 1977-79, California produced 54 percent of total U.S. deciduous output, an increase of 25 percent from 1960-62. California accounts for total U.S. production of dates, figs, nectarines, olives, and pomegranates. Apples are grown in almost every State, but Washington, New York, and Michigan are the leading producers. In 1977-79 these three States produced 53 percent of the total U.S. apple output, compared with their share of 45 percent for 1960-62. Grapes are commercially grown in several States, with 91 percent of total U.S. grape production in California.

Citrus production is concentrated in only four States because citrus fruits are semitropical and do not tolerate freezing temperatures. During the last two decades, citrus production showed a 46-percent increase to 14.3 million tons—primarily because of the heavy plantings of citrus trees after the 1962 Florida freeze. Florida, the leading State, produces 74 percent of the total U.S. citrus output. California's share amounts to 18 percent, while Texas and Arizona account for the remainder with shares of 5 percent and 3 percent, respectively.

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Although berry output (strawberry and cranberry) is relatively small, it showed a sharp gain of 41 percent.

Total fruit production has trended upward, but there have been shifts in producing areas. According to the 1974 Census of Agriculture, the West is the only region which has shown an increase in fruit acreage since 1960.

Production Patterns of Fruit

U.S. orange production has increased 81 percent since 1960-62 due primarily to the sharp increase in bearing acreage in Florida, the largest orange producing State. Despite adverse weather conditions during the last two decades, Florida has increased its production by 78 percent due to increased plantings in the mid-1960's. In addition, the continued strong demand for orange juice also stimulated new plantings in Florida. Approximately half of Florida's crop is Valencia and in 1979 comprised 78 percent of total U.S. Valencia output, almost the same as in the early 1960's. California's share of Valencia oranges decreased from 25 percent in the early 1960's to 20 percent in the late 1970's. However, the share of Navel oranges grown in California increased from 39 percent in 1960-62 to 53 percent in 1977-79.

Grapefruit production fluctuated in the 1960's and slowly increased in the 1970's. Output in 1977-79 was 68 percent higher than in 1960-62. Peak years were 1976/77 and 1977/78, but 1978/79's crop showed the smallest production increase in 4 years, partly because of a big reduction in the Texas crop caused by freeze damage to trees in January 1979 and partly because of Hurricane David which destroyed an estimated 25 percent of the Indian River Crop in Florida. Florida grapefruit production has increased, but its share of U.S. Grapefruit crop remained relatively stable from the 1960-62 average to the 1977-79 average. Seedless grapefruit continued to increase its production of total grapefruit output. Texas grapefruit output reached a peak of 11.9 million boxes in 1977/78 because of increased production of the Ruby Red variety, which has good export demand.

Total California and Arizona lemon production expanded during the 1950's as a result of new planted acreage. In the 1960's this trend was modified by several short crops and the effect of declining bearing acreage. With an upturn in bearing acreage since 1969, total production has increased with a record crop of 1.1 million tons during the 1974-75 season. Total production rose 45 percent in 1977-79 from 1960-62.

Apples are one of the major deciduous fruits in the United States, and since 1960-62 apple production has increased almost 37 percent. The large crops were attributed mainly to the increase in production on the West Coast—particularly in Washington which now accounts for almost one-third of the total U.S. apple output.

A great many apple varieties are on the decline in the East, but they account for only a small share of total production. Traditional processing varieties on the decline include Gravenstein, York, Northern Spy, Stayman, and R.I. Grenning. The varieties increasing in production in all regions, suitable for fresh market utilization, are Delicious and Golden Delicious. Total Delicious and Golden Delicious production increased 35 and 55 percent, respectively, since 1969.

The Western States showed the most dramatic increase in Delicious and Golden Delicious production, as a result of heavy plantings and the increased proportion of dwarf and semi-dwarf trees, which have greater per acre yield potentials than standard types.

Avocado production has risen 148 percent since 1960, primarily because of the dramatic rise in California avocado plantings in the last 8 years. Starting with fewer than 25,000 acres in 1970, continuous plantings since have raised this total to an estimated 55,000 acres. In 1977-79, California accounted for 83 percent of total U.S. output. The prime reason for these increased plantings was the tremendous rise in demand for avocados. The remaining supplies of avocados from Florida are relatively small, but avocado production in Florida has also increased tremendously due to the sharp increase in bearing acreage.

Grapes are the largest deciduous crop produced in the United States and California produces 91 percent of total output. Production fluctuated in the 1960's and early 1970's and has steadily increased since 1973. The 1977-79 output was 42 percent higher than in 1960-62. California grows three main types—wine, table, and raisin. While production of both the wine and raisin types increased greatly since 1960—256 percent and 37 percent, respectively—production of the table variety decreased 26 percent. The sharp increase in wine variety grape production is attributed to large plantings of wine grapes in the 1970's as a result of the continued increase in wine consumption. Per capita wine consumption has tripled since the early 1960's and the wine industry has expanded greatly in the last decade.

Nectarine production is one of the fastest growing segments of the California fruit industry. Production has trended upward and reached a record 172,000

Table 1—Fruits and berries: Changes in production and relative importance for 1960-62 and 1977-79 averages

Commodity	Production		Change in production	Share of total production	
	1960-62	1977-79		1960-62	1977-79
	1,000 tons			*Percent*	
Berries	311.9	440.4	41.2	1.8	1.6
Strawberries	246.9	323.1	30.8	1.4	1.2
Cranberries	65.0	117.3	80.5	.4	.4
Deciduous fruits	9,523.1	11,957.0	25.6	53.0	44.8
Apples	2,717.2	3,701.1	36.5	15.1	13.9
Apricots	199.4	137.4	-31.1	1.1	.5
Avocados	48.4	120.0	147.9	.3	.4
Cherries	247.1	255.1	3.2	1.4	1.0
Dates	22.6	23.1	2.2	.1	.1
Figs	8.7	37.0	325.3	([1])	.1
Grapes	3,187.4	4,534.2	42.3	17.8	17.0
Nectarines	49.7	158.3	218.5	.3	.6
Olives	54.0	76.0	40.7	.3	.3
Peaches	1,817.2	1,434.3	-21.1	10.1	5.4
Pears	664.7	791.0	19.0	3.7	3.0
Plums and prunes	503.3	671.0	33.3	2.8	2.5
Pomegranates	3.4	9.5	179.4	([1])	([1])
Citrus fruits	8,120.8	14,267.6	75.7	45.2	53.6
Grapefruit	1,745.6	2,936.0	68.2	9.7	11.1
Lemons	624.6	905.3	44.9	3.5	3.4
Limes	12.6	29.0	130.2	.1	.1
Oranges[2]	5,738.0	10,397.3	81.2	31.9	39.0
Total	17,955.8	26,665.0	48.4	100.0	100.0

[1] Less than 0.1. [2] Includes tangerines, tangelos, and temples.

tons in 1979, compared with only 50,000 tons in the early 1960's, primarily because of steady increases in acreage and yield. Total bearing acreage has increased from 8,218 acres in 1960 to 16,507 acres in 1979. Yield increased even faster than acreage during the same period.

U.S. peach production generally trended downward in the early 1970's. California growers pulled out large numbers of both clingstone and freestone peach trees because of low prices. However, production there has recovered some in recent years. From 1960-62 to 1977-79 total California cling peach production—most of which is for processing increased only 3 percent. However, its share of total U.S. peach production increased from 37 to 48 percent, mainly because of the sharp decrease in freestone peach production in other areas.

Freestone peach production declined 35 percent from the 1960-62 average to the 1977-79 average with decreases shared by California and other States. California freestone peach production hit a low of 352 million pounds in 1972 and then gradually recovered to 468 million in 1979. Likewise, freestone peach production in other States reached a low in 1972, but recovered to 1.1 billion pounds in 1979, compared with 1.8 billion pounds in 1960.

Pear production has been very erratic since 1960, fluctuating widely and increasing 18 percent from 1960-62 to 1977-79. California grows almost half of the U.S. total pear output, and California, Oregon, and Washington now grow approximately 94 percent of the total. The Western States have increased their share from 89 percent in 1960-62 to 94 percent in 1977-79, while the Eastern and Central States decreased their share from 11 percent to 6 percent. Bartlett, the leading commercial pear variety, is highly prized for both dessert and processing qualities and accounts for approximately 70 percent of the total. However, both Oregon and Washington with the substantial production of "late" varieties, most of which are fresh market, have increased output considerably.

Production of strawberries and cranberries, the major berries in this country, has increased. Even with a sharp 61 percent decrease in bearing acreage from the early 1960's, strawberry output increased 31 percent. During the last 20 years, the continued introduction of improved varieties has increased yield dramatically by 235 percent. Important production areas are concentrated in three Pacific Coast States. In 1960-62, their share of the total market was 63 percent, and in recent years it has risen to 87 percent. The strawberry industry is becoming highly commercialized and many States have discontinued strawberry operations because of the increased imports of Mexican strawberries.

Cranberry production is concentrated in only few States with an 80-percent increase in production since the early 1960's. A sharp increase in yield is behind the larger production since bearing acreage only rose 10 percent during the last 20 years.

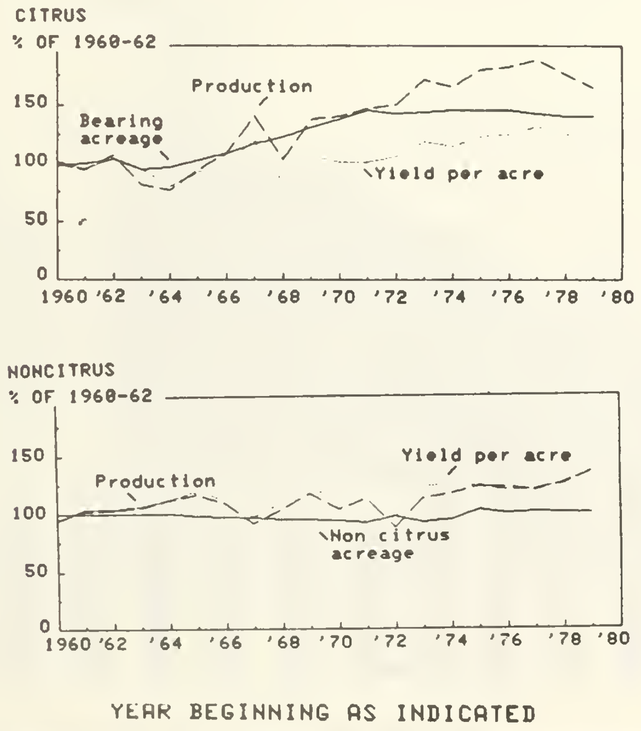
Changes in Production Technology

Technological developments and the increased use of capital are the major contributors to the trend toward fewer, larger, and more efficient farms. According to Census of Agriculture data, the number of fruit farms declined from 225,000 to 117,009 between 1964 and 1974. While the number of farms decreased, the size of the fruit farm increased and the total value of fruit produced per farm more than tripled—from $6,217 to $23,090 during this period.

Fruit yield per acre also improved significantly with noncitrus up 27 percent and citrus up 24 percent. This increasing trend in yields can be largely attributed to new technology and improved cultural practices and harvesting techniques. Improved cultural practices include better sprays for diseases, insects, new varities, and weed control, and widespread use of irrigation and fertilizer to improve productivity. Effective bee use has led to better fruit pollination thereby increasing yield, and better techniques and equipments are used to protect fruit from freezing temperatures.

Computerized technology has also been applied to orchards in predicting harvest dates to achieve optimum maturity. The predicted date can help in long-range planning for the best use of labor and equipment. Various types of equipment have been developed for use in gathering fruit, such as catch frames, rakes with row machines, truck shakers, and pickups of various types and descriptions. A recent USDA study indicated that mechanization of harvest has progressed further with fruit crops for processing (38 percent machine harvested) than with fruits for the fresh market (less than 1 percent machine harvested). Machines with labor displacement ratios ranging from 3.1 to 33.1 have been employed on fruit farms. All of this equipment is aimed at reducing labor needs. With the replacement of farm labor by

U.S. FRUITS:
ACREAGE, YIELD, AND PRODUCTION



YEAR BEGINNING AS INDICATED

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mechanical aids, together with other technological advances, labor efficiency on the fruit farm (as measured by production per work-hour) has increased 30 percent from 1964 to 1978.

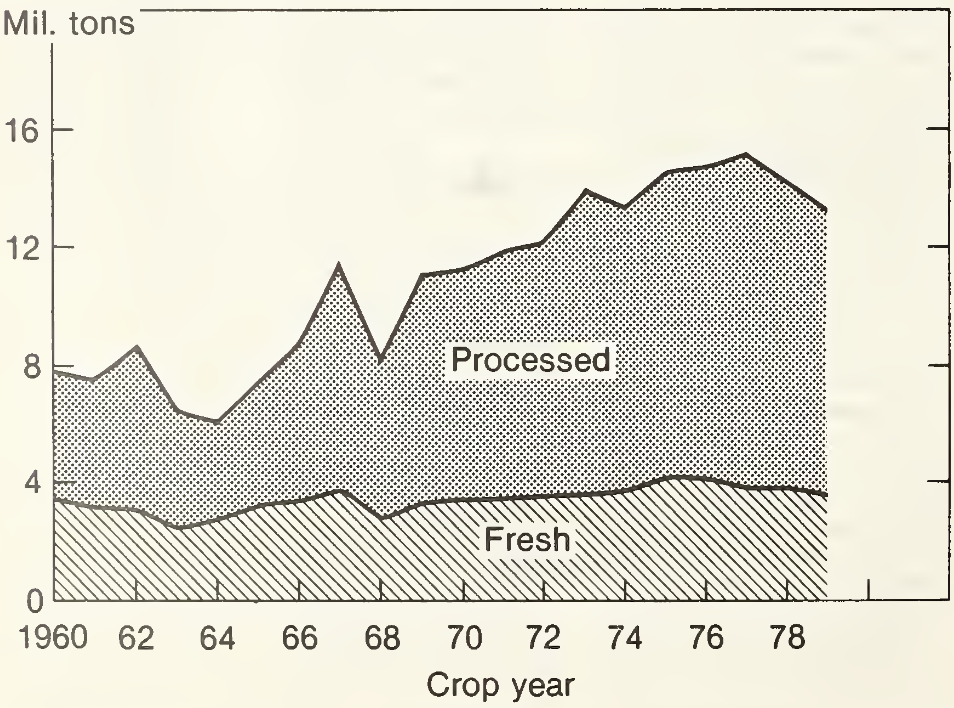
Shifts in Utilization

For the past two decades, the citrus and deciduous fruit industries have gone through a transition from fresh use to processing use. The proportion of total fruit sales for processing use increased from 61 percent in 1960-62 to 70 percent in 1977-79. Changes in dietary habits and food buying patterns have affected this trend, in addition to consumers desire for convenience and time.

Processing use of citrus fruit has been trending upward. While fresh use increased 16 percent from 1960-62 to 1977-79, processing use rose 118 percent and increased its share of total citrus output from 60 to 74 percent during the same period. In recent years, almost 82 percent of all oranges were utilized in processed products. The amount of oranges used for processing has increased 130 percent since 1960-62, due mainly to the wide use of frozen concentrated orange juice (FCOJ). The proportion of Florida oranges used for FCOJ is now approximately 79 percent of the crop compared with 57 percent in 1960. A significant increase in use of Florida oranges for chilled products, especially juice, has also occurred. While there have been sharp increases in use of oranges for frozen concentrated and chilled juice, the volume of Florida oranges used for canning has decreased substantially during the period. In California, fresh use of oranges is still dominant, but the trend in processing use is upward.

The utilization of Florida grapefruit establishes the industry pattern for all U.S. grapefruit. Fresh use of Florida grapefruit has increased approximately 10 percent since the early 1960's, but its market share decreased in relative terms from 51 percent to 35 percent between 1960-62 and 1977-79. Utilization of grapefruit for frozen concentrated grapefruit juice (FCGJ) displaced canned grapefruit juice as the number one use of processing grapefruit. FCGJ accounted for 26 percent of total grapefruit sales in 1977-79, compared with only 8 percent in 1960-62. The rapid increase in demand for chilled grapefruit juice has also contributed to sharply larger utilization of grapefruit. During the last two decades, gra-

Citrus Fruit: Production & Utilization



1979 preliminary.

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pefruit used for chilled juice rose to approximately 4 million boxes from 0.1 million.

Utilization of lemons has fluctuated widely. Normally, more lemons are used for fresh use, but the proportion of lemons for fresh use is declining. In 1977-79, approximately 52 percent of U.S. lemons were for the fresh market, compared with 58 percent in 1960-62.

Deciduous fruit used for processing also trended upward during the last two decades. But within the processing use, there have been shifts in the relative importance of canning, drying, freezing, crushing, and other types of processing (brining etc.). Increased consumption of wine triggered sharp increases in grape production, particularly wine varieties. This has resulted in crushing taking an increasing share of noncitrus fruit for processing. The increased use of apples for juice has also added greatly to the proportion of juice in the processing use of noncitrus fruit. One reason for this growth is that apple juice and sweet cider are of far better quality than only a few years ago.

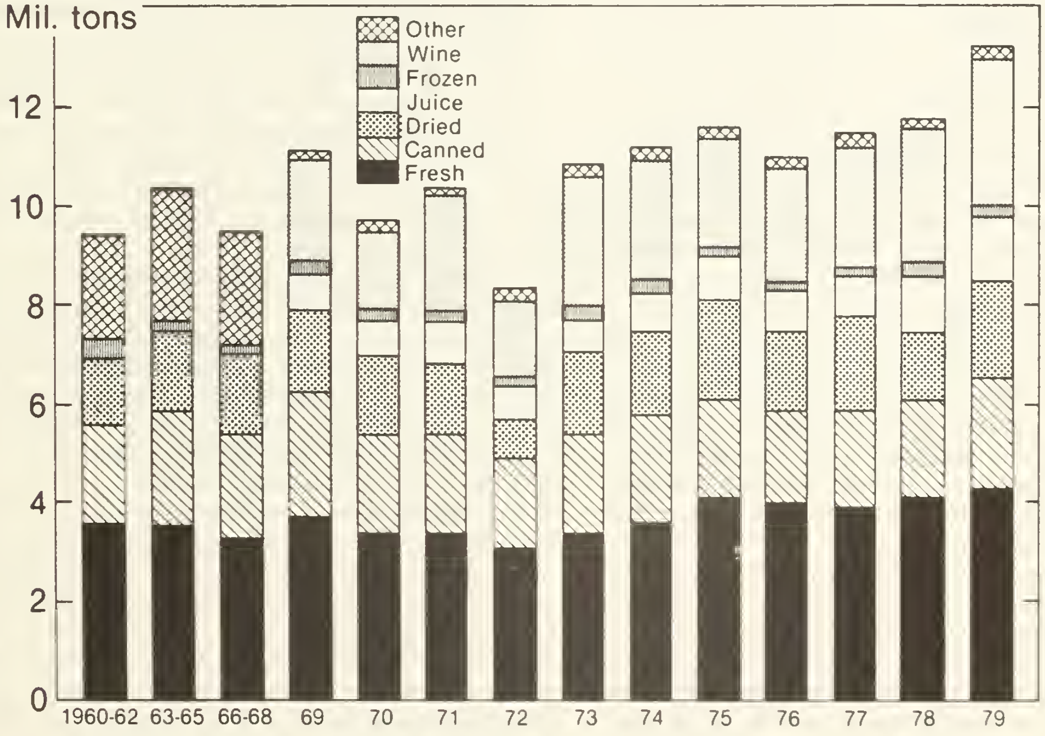
The decrease in the share of deciduous fruit for canning has been associated with sharp declines in the use of peaches and pears. While apples account for a relatively large proportion for canning, the total quantity does not show any trend. Overall, the share of processing deciduous fruit for canning dropped from 35 percent in the early 1960's to 25 percent in 1979.

The quantity of deciduous fruit used for freezing has been relatively small and has fluctuated only slightly since 1960, but its share has also declined. Pies and related bakery goods are the major outlets for frozen deciduous fruits. On the other hand, the quantity of deciduous fruit for drying, mostly raisins and prunes, increased considerably, but its share remained relatively steady at 25 percent of total processing use.

Trends in Consumption

Many factors can induce increased per capita fruit consumption—improved distribution and availability, new product forms, better storage, higher disposable personal incomes, increased advertising and promotion, changes in consumer tastes and preferences, and lower prices. In the last 20 years, there has been an increase in per capita consumption of all fruits, fresh and processed combined on a fresh weight

Noncitrus Fruit: Production & Utilization



Note: 1960-68 juice and wine included in other. 1979 preliminary.

USDA Neg. ESCS 218-80(7)

Table 2—Fruit per capita consumption: Fresh weight equivalent 1960-64, 1965-69, 1970-74 averages and annual 1975-79

Year	Fresh			Processed			Canned fruit		
	Citrus	Noncitrus	Total	Citrus	Noncitrus	Total	Citrus	Noncitrus	Total
					Pounds				
1960-64 . . .	28.4	55.7	84.1	48.9	51.7	100.6	1.8	25.2	27.0
1965-69 . . .	29.0	51.6	80.6	56.3	51.5	107.8	2.0	25.3	27.3
1970-74 . . .	28.2	51.0	79.2	78.1	49.1	127.2	1.7	23.7	25.4
1975	29.7	54.7	84.4	98.1	48.1	146.2	1.4	21.3	22.7
1976	29.4	57.4	86.8	96.0	47.1	143.1	1.2	21.1	22.3
1977	26.7	56.5	83.2	95.7	47.6	143.3	1.3	21.9	23.2
1978	27.0	56.3	83.3	88.6	48.1	136.7	1.4	21.0	22.4
1979	24.8	59.8	84.6	89.0	52.5	141.5	1.4	21.4	22.8

Year	Canned juice			Chilled citrus	Frozen fruit and juice			Dried Noncitrus	All fruit		
	Citrus	Noncitrus	Total		Citrus	Noncitrus	Total		Citrus	Noncitrus	Total
						Pounds					
1960-64 . .	10.0	10.5	20.5	4.3	32.8	4.2	37.0	11.8	77.3	107.4	184.7
1965-69 . .	10.2	10.5	20.7	8.1	36.0	4.4	40.4	11.3	85.3	103.1	188.4
1970-74 . .	13.6	11.6	25.2	10.9	51.9	4.0	55.9	9.8	106.3	100.1	206.4
1975	15.2	11.1	26.3	12.1	69.4	3.9	73.3	11.8	127.8	102.8	230.6
1976	14.3	11.8	26.1	13.1	67.4	3.7	71.1	10.5	125.4	104.5	229.9
1977	12.4	11.9	24.3	12.2	69.8	3.6	73.4	10.2	122.4	104.1	226.5
1978	14.4	14.8	29.2	13.0	59.8	3.7	63.5	8.6	115.6	104.4	220.0
1979	14.3	15.7	30.0	11.7	61.6	3.1	64.7	12.3	113.8	112.3	226.1

equivalent basis, from approximately 195 to 225 pounds. The gain has come almost entirely from the increase in per capita consumption of processed fruit.

Per capita consumption of processed fruit steadily increased from 105.3 pounds (fresh weight equivalent) in 1960-62 to 140.5 pounds in 1977-79, an increase of 33 percent, due primarily to the increased consumption of processed citrus. Processed citrus consumption increased in both absolute and relative terms. In 1960-62, per capita consumption of processed citrus averaged almost 54 pounds (fresh weight equivalent), 51 percent of the total processed fruit. By 1977-79 it reached 91 pounds (fresh weight equivalent), 65 percent of the total. The rise in per capita consumption of processed citrus over the past two decades was marked by a sharp increase in frozen items. Since the successful introduction of frozen concentrated orange juice (FCOJ) in the mid-1940's, per capita consumption has trended upward. FCOJ consumption reached a record 9.94 pounds (product weight) in 1976 and in 1979, 8.7 pounds, 91 percent more than in 1960.

Chilled citrus products also have a great impact on total processed citrus consumption. Since the introduction of chilled juice in the mid-1950's, per capita consumption has trended upward from 5.0 pounds (fresh weight equivalent) in 1960-62 to 12.3 pounds in 1977-79. The major item is chilled orange juice, which has increased from 1.98 pounds (product weight) to 5.14 pounds during the last two decades.

While per capita consumption of processed citrus increased greatly, per capita consumption of processed noncitrus fruit declined from 51.5 pounds in 1960-62 to 49.3 pounds (fresh weight equivalent) in 1977-79. The decrease was attributed entirely to canned fruit. Per capita consumption of canned fruit juice rose from 6.74 pounds (product weight) in 1960-62 to 9.27 pounds in 1977-79, primarily reflecting increased apple juice consumption. Per capita canned apple juice consumption jumped from 0.89 pounds (product weight) in 1960 to a record 5.37 pounds in 1979.

Per capita consumption of all fresh fruit decreased from 88.8 to 84.4 pounds between 1960-62 and 1977-79, due mainly to the sharp decrease in citrus consumption. Fresh noncitrus consumption fluctuated from a low of 49.2 pounds in 1973 to a high of 60.2 pounds in 1960, while the fluctuation of fresh citrus consumption ranged from a low of 24.8 pounds in 1979 to a high of 33.7 pounds in 1960.

The substitution of processed for fresh fruit is believed to be closely associated with consumers' changing taste and preferences, the increasing trend of women employed outside the home, and the desire for convenience. Since the development of processed products in the United States was primarily oriented toward domestic consumption, the products which evolved were produced and marketed in consumer-size packages, and in the case of FCOJ, at Brix levels suitable for direct consumer size. The increase in consumption of processed citrus products also reflects relatively small increases in price compared with other foods, convenience, effective marketing programs, and quality improvement. Recently, the trend has been toward a larger allocation of product to chilled orange juice which has assumed the "convenience food" role once held by FCOJ.

Shifts in Export Markets

World fruit production has been expanding rapidly during the last two decades, but the United States is still by far the largest single producer of citrus and noncitrus fruits. The United States exports a large quantity of fruit. Although there were wide fluctuations during the past 20 years, the overall growth of the fruit export market has remained strong.

Fresh grapefruit, lemons, oranges, and apples have led to the export increases. Exports of grapefruit have been generally good since Japan adopted a liberalized trade policy toward fresh grapefruit in 1971. Since then, Japan has replaced Canada as our leading export market. The U.S. supplies about 90 percent of Japan's imported grapefruit. As a result, approximately 300,000 tons of grapefruit were exported in 1977/79, an increase of 188 percent from 1960/62.

The United States and the Mediterranean countries supply about 90-95 percent of the world's lemon exports. U.S. lemon exports have increased substantially in the last 20 years, due largely to greater shipments to Japan following Japan's lifting restriction on quotas. Over half of the United States' exports of lemons go to Japan. 0ther leading outlets include Canada, West Germany, and France. The opening of a U.S. lemon market in Russia has enhanced our export potential for the Eastern European market.

The United States produces close to 30 percent of the world orange crop. Although our exports of fresh oranges have increased sharply during the last two decades, the share of our orange output exported declined to only 3 to 4 percent. Rising production around the world has intensified competition for U.S. oranges in world markets. Nearly half of U.S. fresh exports are shipped to Canada, but substantial quantities are shipped to Hong Kong, Europe, and Japan. Japan accounted for 15 to 20 percent of U.S. orange exports in recent years. This increase should be due to the recent expansion of that country's inport quota for oranges.

U.S. apple exports fluctuated widely in the 1960's, but trended upward each year since 1971. Canada is the largest outlet for U.S. apples, accounting for approximately 35 percent of U.S. exports. Shipments to Europe also account for a large percentage of U.S. apple exports. However, trade patterns with respect to U.S. apple export have shifted in recent years. Shipments to the Mideast and Latin America have increased significantly, particularly to Saudi Arabia, Mexico, Venezuela, and Colombia. The establishing of U.S. apple markets in the Far East, particularly Hong Kong and Taiwan, has further enhanced export potential. Overall, U.S. apple exports have doubled during the last two decades.

While the fresh fruit market has experienced strong export activity, processed fruit exports have stagnated. U.S. canned fruit export destinations have shifted significantly. Because of tariffs and increased competition, shipments of U.S canned fruit to Western Europe have declined considerably. In 1960, the United States commanded 90 percent of the total canned fruit imports of Western Europe. Recently, that figure dropped to as low as 5 percent. In contrast, U.S. exports of canned peaches and fruit cocktail to Japan increased. Other Far East markets showing signs of growth are Hong Kong, Singapore, Taiwan, and Indonesia. Taiwan has reduced its duty on canned peaches. In the Mideast, U.S. exports of canned fruit to Saudi Arabia have shown remarkable gains.

U.S. exports of dried fruits, particularly raisins and prunes, have not shown any definite trend during the last two decades. However, the recent economic and political turmoil in some other raisin producing areas of the world has been reflected in good demand for U.S. raisins.

Changes in Marketing and Processing Industry

With the continued growth of supermarket chains emphasizing a mass merchandising of uniform quality products at low cost, more direct marketing of fruits at shipping point has become increasingly popular. Also, to maintain or improve competitive or bargaining positions, growers tend now to either take more collective action or become associated with integrated marketing systems. So, cooperative marketing and bargaining associations play an increasing role in handling the growers' produce.

The number of fruit and vegetable marketing cooperatives peaked in 1930/31 at 1,386, but by 1975/76 had dropped to 411. Of this total, 92 were citrus cooperatives and a total of 150 specialized in handling deciduous and other noncitrus fruits. Despite the decreasing number of fruit and vegetable cooperatives, the cooperative share of the total U.S. fruit and vegetable market continued to increase from 20 percent in 1950/51 to 27 percent in 1975/76. The decreasing number of marketing cooperatives has generally been the result of mergers. Thus, they can operate under a completely integrated system or coordinate their marketing operations through a joint selling or joint venture approach. With larger facilities, they hope to operate more efficiently.

With the increasing quantity of fruits marketed for processing use, the use of contracts between producers and processors is becoming more important. Bargaining cooperatives generally play major roles in bargaining for prices and other contract terms involved in the sale of members' products used for processing. A recent study showed that 34 associations in 17 States representing more than 10,000 members bargained for fruits and vegetables worth nearly $1.3 billion in 1978 compared with $216 million in 1971. Bargaining associations handled major shares of certain fruits: 62 percent of apricots, 59 percent of clingstone peaches, 45 percent of prunes, 44 percent of tart cherries, and also a very large percent of Barlett pears, freestone peaches, and raisins.

Even with increased demand for processed fruits, the number of fruit canning plants decreased from 1,228 in 1967 to 903 in 1977 according to the Census of Manufactures data. However, the volume processed increased substantially and the value of the pack increased from $4 billion in 1972 to $6.8 billion in 1977. Many packers also have built new plants with modern facilities to improve efficiency.

Since 1958, the number of plants freezing fruits and vegetables has fluctuated widely. Between 1958 and 1963, the number of plants increased substantially from 426 to 650. Freezing plants then decreased to 610 in 1967. In 1972 the existing plants dropped sharply to 109 then increased to 266 in 1977. However, the value of shipments increased from $832 million in 1963 to $3,047 million in 1977. The number of plants dehydrating fruits and vegetables and soups increased slightly from 176 in 1963 to 178 in 1972. The quantity of dried and dehydrated fruits increased from 850 to 1,456 million pounds during the same period.

Since output of processed fruits and vegetables has increased sharply, processing fruit cooperatives have continued to maintain a large share of the manufactured fruit product business. Cooperatives process about two-fifths of all citrus used for processing, and they also process about two-fifths of the total dried fruit pack. They pack about a third of the canned deciduous fruit and freeze about a fifth of the deciduous fruits. In some cases, cooperatives are dominant. However, the number of fruit and vegetable processing cooperatives has declined over the past 25 years. In 1975, about 50 cooperatives processed fruits and vegetables, a 23-percent decrease from the 65 operating in 1950. During the same period, the business volume of fruit and vegetable processing cooperatives increased from $678 million in 1966/67 to $1,246 million in 1976/77.

Fruit packers have brought increased attention to improvement of processing efficiency and more effective product marketing. In plants, more automation facilities have been installed for both fresh packing and processing. Computerized electronic weight-sizers have been installed in plants to size and grade fruits in large volumes at faster speed than mechanical equipment. Computers are also widely used to relieve the increasing burden of marketing information and management in the fruit industry. Processors also have developed new processing technology to assure taste, color, and appearance of various kinds of fruits. New equipment in processing operations is geared toward lowering unit labor costs. With increases in the volume of processing of fruit and improvement in plant and equipment, the value added by manufacturers has increased substantially in the last decade.

The marketing system continue to shift in the transportation of fresh fruits from railroads to motor carriers during the last 20 years. Trucks have increased their share of total fresh fruit shipments from 60 to 80 percent. The increased share of truck shipments reflects route flexibility, lower costs of trucking for short hauls, and better handling of fruits. In addition, as decentralization of marketing activity increased, trucks were particularly well adapted to receive fruits directly from producing areas. The quantity of fresh fruit shipped by air has been relatively steady during the last several years.

Prospective Developments in the 1980's

The fruit industry is expected to continue undergoing many changes into the 1980's. Fruit production will be characterized by fewer farms. Continued improvement in efficiency often requires increased capital use and large-scale operations which will force small and less efficient fruit growers out of business. Rising labor costs will accelerate the use of mechanized cultural and harvesting techniques to improve output per work-hour. Several new technological devices are being developed for future use in orchards. A mechanical harvester can pick low bushberries with a minimum 80-percent recovery at a rate of one-half acre an hour. A new machine called a "power frame" that could revolutionize fruit growing is in development. The new machine with a single operator will be able to harvest fruit at a potential rate of 6,000 bushels per day. In addition, it will also handle pruning and spraying. A prototype shaker will harvest fruit such as byproduct lemons at considerably reduced cost. A new four-row harvester can pick grapes in substantially less time.

With continued development of new varieties and larger bearing acreage for several fruits, total fruit production in the long run is expected to increase more than population growth. Due to climate conditions, fruit production will continue to be concentrated in a few States. The outlook for increased citrus production is more promising than noncitrus production.

Citrus production in Florida is likely to increase more than in California, but the rate of the increase is likely to be slower than from the 1960's to the 1970's. Citrus bearing acreage in Florida has recently declined, but the trees will be more productive in the 1980's. On the other hand, bearing acreage for California oranges has also steadily declined—primarily because of the increase in use of land for urban expansion. Orange production there is not expected to increase appreciably even though the yield could rise somewhat. Orange production in Arizona and Texas is likely to continue downward.

Total grapefruit production is expected to increase steadily throughout the 1980's, but the rate of increase will not be as fast as in the 1970's. Most of the increase will be in seedless grapefruit, particularly fresh varieties, while the seedy varieties are expected to remain relatively stable. The large plantings of the Star Ruby and other varieties in Texas likely will lead to substantially increased output of pink grapefruit. In view of the steadily increasing bearing acreage in California, lemon production in the 1980's will move upward.

The production of other specialty citrus like tangelos, tangerines, Temples, and honey tangerines have enjoyed good demand. This stimulated larger plantings in the mid-1960's with large production potential in the 1980's. Substantially larger plantings of limes in recent years will result in larger crops in the 1980's. Overall, a substantial increase in total citrus production—perhaps 20 percent—can be expected by 1990.

Production of deciduous fruit will continue to be primarily in West Coast States, and California will remain the dominant producer—probably further increasing its share of the market. Output of nectarines, avocados, and grapes will be larger since their acreages have steadily increased. Increased wine consumption has stimulated new plantings of grapes. Among other important deciduous fruit, California freestone peach production will increase in the years ahead. Very large plantings have taken place in the last several years in response to consumer demand for more fresh fruit. On the other hand, production of clingstone peaches and Bartlett pears, the two major processing fruits is expected to stabilize. The reduced demand for canned fruit has contributed to a slowdown in plantings. However, the winter pear crop in the West Coast will be substantially larger since pear trees damaged by a freeze in the late 1960's in Washington were replanted and have reached bearing age.

The outlook is for apple production to increase. Acreage has increased since the 1960's and continues to rise due to favorable prices. Dwarf and semi-dwarf apple trees planted during the past years are expected to have greater per acre production potentials. In addition, the introduction of compact dwarf Red Delicious apple trees will further add to yield per acre. However, increased production will be larger in the West Coast than in the Central and Eastern States.

With the expectation of increased fruit production, the fruit industry will further improve facilities and equipment. Packing plants will adopt additional automated operations. Computers will be increasingly important in running plants. Computerized electronic weight-sizers will size, grade, and sort fruits at larger volume in less time. Computers will also provide information in handling, packing, marketing, and inventory control for fruits. Furthermore, the computer will keep track of handling and marketing costs so the cooperative fruit grower's share can be quickly calculated from a pool system. All these devices will improve efficiency.

Continued improvement in processing technology will also take place in the fruit industry. A steril-vac process for canning fruit could benefit the fruit industry. The process removes air from both the fruit and its container. The flavor and the nutrients are not diluted with water, syrup, or brine that is required in conventional canning methods. It also holds the possibility of giving the consumer nearly 50 percent more fruit in the can size currently in use and a yield of more fresh-off-the-tree flavor. In addition, the process holds a particular advantage for canners in that there is an energy efficiency in the process of about 70 percent compared with 18 to 30 percent in the conventional method. Another technology being developed includes a solar-drying system that may be feasible in the future for drying fruit—particularly raisins. The process uses an inexpensive polyethylene solar-collector to absorb the sun's heat. The collector reduces drying time by 40 percent compared with conventional sun drying. In addition, grapes are under cover during drying which minimizes rain damage. The dehydrofreezing process to freeze fruit will continue to provide a potential processing technique for fruit for use in manufacturing products such as pies and other bakery products. Constant improvement in technology to store fresh fruit in controlled atmosphere storage may prolong marketing seasons and maintain the quality of some fruits.

Total demand for fruit will increase in the years ahead due mainly to population growth and continued increases in disposable personal income. Our foreign market potential is likely to be favorable and the fruit industry is constantly looking for new markets. Canada will continue to be a principal customer for many fruit items. Exports to the Common Market are likely to be difficult because of import barriers that effectively block U.S. fruit. With the cooperative promotional effort and trade bargaining, the Far East markets showing signs of growth are Japan, Hong Kong, Singapore, Tawian, and Indonesia. Prospects for higher personal income, increased population growth, and improved living standards in that section of the world will enhance U.S. export potential. In the future, one area with strong potential will be the Mideast—particularly Saudi Arabia and the Persian Gulf countries. In addition, the continued unrest in some fruit-producing countries in that part of the world will further strengthen demand for U.S. fruit. Demand for some fruits in several Latin American countries also is expected to be favorable.

Domestically, per capita fruit consumption is expected to continue to increase some during the 1980's but at a slower rate of increase than during the 1970's. Increases are expected for both citrus and deciduous fruit, but most of the increase is likely to be in citrus. Consumer demand for fresh fruit will increase even though the largest increases will be in processed forms. The increased employment of women and the desire for more leisure time will contribute to the growing demand for convenience foods, such as processed fruit. In addition, a slower rise in retail prices of processed fruit than fresh fruit will also contribute to larger demand for processed fruit. On the other hand, diet conscious consumers and more available supplies, including imports, will boost fresh fruit consumption, particularly for items such as avocados, nectarines, and winter pears.

Per capita consumption of all fruit, in fresh weight equivalent is projected to increase about 8 percent by 1990. Citrus will account for a little over half of per capita fruit consumption, compared with 50 percent in 1979. Among the citrus items, per capita consumption of frozen concentrated orange and grapefruit juice will continue as leading items, but the rates of increase are not likely to be as fast as in the 1970's. Chilled orange and grapefruit juice will continue to gain in importance because of the convenience and good flavor.

Per capita consumption of deciduous fruit is projected to increase only moderately during the next 10 years, and its share of total fruit consumption in 1990 will be down slightly from current levels. Among the processed forms, per capita consumption of canned juice items, particularly apple juice, is expected to continue to gain. There has been a boom in the market in the past few years for apple juice because of its improved taste and flavor. In addition, more mixed fruit juice items will be introduced in the market and are likely to become increasingly appealing. This also will contribute to larger juice consumption. Per capita frozen fruit consumption—a relatively small quantity—is likely to remain relatively stable. Dried fruit, long a year-round staple, will likely gain somewhat. The mixed snack packs of raisins, tree nuts, and some other edible food items such as chocolate chips are gaining popularity, and as a result, will boost dried fruit consumption. In contrast, demand for canned fruit will probably be reduced somewhat because of its high sugar content. However, the increased alternative use of some pure fruit juice for replacing the high sugar content in canned fruit may change consumption patterns.

Many changes have taken place in the fruit industry and marketing systems will also continue to change. Many large fruit growers due to increasing specialization and commercialization, are likely to integrate their operation into packing and shipping. With retail grocery chains getting larger, more of the fresh fruits going to major markets will be bought direct. Thus, more fruits will be distributed through a grower-packer-shipper integrated marketing system. However, cooperatives will continue to play an increasing role in marketing and processing fruit, and cooperative mergers will increase in order to achieve marketing objectives through increased use of joint ventures, improved efficiency, and additional sales opportunities. In addition, cooperatives are expected to diversify their operations to handle many varieties of fruits including imports. Thus, direct sales to retail food chains through marketing cooperative will increase as will sales to large-volume buyers who want to purchase as much as possible from suppliers able to fill multi-product requirements.

With more fruits expected for processing use, processing cooperatives are expected to continue to expand. Cooperatives will acquire and combine with well-established processing companies and will gain a larger share of processed fruit markets, as important suppliers of high volume private label and store brand items. Because large capital investments are required to modernize fruit processing plants, some multiple food companies are likely to abandon fruit processing operations.

In additional to changes in fruit processing and marketing, transportation changes are also likely. Rail shipments of fruit could make a "comeback", because of rising fuel costs. Railroad movement is more fuel efficient and requires less labor. Thus, the increased use of rail piggyback is likely to take place. However, trucks will still remain the primary transportators of fruit.

As the size and number of larger buyers increase in the 1980's, more fruit growers are likely to take collective bargaining positions. Cooperative bargaining associations will seek to coordinate their efforts to present a unified naional approach to bargaining for their members. The industry has recognized that promotional effort can open up new horizons and strengthen U.S. competition with foreign suppliers. So the role of trade and promotion associations will grow in importance not only in domestic markets, but also in foreign markets..

Finally, the pick-your-own operation and roadside markets are other marketing systems that probably will become increasingly popular with small fruit and berry growers near population centers. This type of operation has often proved profitable for many small and medium-sized growers and might provide a practical solution to a diminishing supply of harvest labor.

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